THE IRON AGE.

THURSDAY, JANUARY 25, 1900.

The Most Perfect Machine Shop.*—IV.

Building No. 16 of the Schenectady Works of the General Electric Company.

BY S. D. V. BURR.

Boring and Turning Mill Drives.

The engraving, Fig. 27, shows a Pond double head boring and turning mill, in which very little change was required to adapt it to a motor drive. As indicated at the left, the cone pulley provided with the machine was removed and the motor and intermediate gearing substituted, no other change being made.

Fig. 28 is a rear view of the same mill.

Three other instances of motor drives applied to boring and turning mills are shown in Fig. 29, the machine to the left being a Betts mill, and the other two from the works of Bement, Miles & Co. All of these views bring out one important thing very prominently—namely, the panels. It will be understood that these are, in the case of each machine, placed in as convenient a position for the operator as individual circumstances will permit. In the center mill it is placed directly in one of the building columns; while in the other two, owing to the location of the machines between the columns, the only available place was on a stand alongside of the motor. In the Bement, Miles mills the intermediate gearing, or that through which the power is transmitted from the motor to the machine proper, is boxed in, as shown in the half tone.

In the boring, drilling and tapping machine, Fig. 30, the motor is placed below the floor, taking the place of the original drive, the panel being on the column near by. This view shows plainly the ammeter, switch for the three-wire system, and rheostat.

Cutting Speeds for Boring and Turning Mills.

The diagram, Fig. 31, is self explanatory. It gives the diameters of the work, the revolutions per minute, the seconds and minutes per revolution, and the cutting speeds, the latter being indicated by the diagonals. Thus the revolutions per minute for work 10 feet in diameter, the cutting speed being 20 feet, would be nearly 8, while the time per revolution would be about 93 seconds. For the same diameter and cutting speed of 50 feet, the revolutions per minute would be about 18, and the time per revolution 37 or 38 seconds. It will thus be seen that a glance at the chart gives all necessary information for the guidance of the workman.

A blue print of a table from which this diagram is plotted is provided for each boring and turning mill attendant, and it is expected to be his guide in the running of the machine. It does away with all guess work or calculation on his part, the responsibility being placed upon the superintendent of the shop.

It essentially provides a check on the speed of the operator, as the foreman can ascertain at a glance

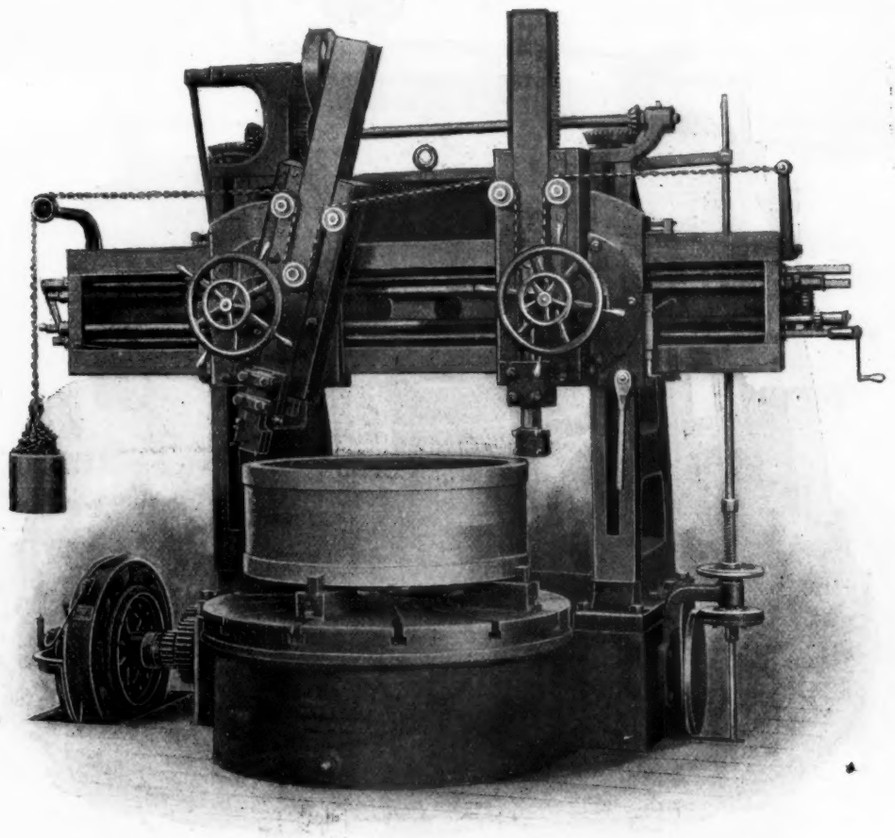


Fig. 27.—Pond Double Head Boring and Turning Mill with Motor in Place of Cone Pulley.

*See *The Iron Age*, January 4, 11 and 18 1900.

whether the machine on any particular job is working to its full capacity according to the figures of the table. It is presumed that the time of revolutions given for different cutting speeds and diameters of work are the maximum, so that the accountability of the workman ceases if he follows the directions set forth. Further, he knows that by following this table he is practically using the tool to its utmost capacity, and that he will turn out the job in the shortest time.

The Menominee Range in 1900.

DULUTH, January 22, 1900.—A brilliant example of what exhausted mines can do has been and is now being furnished by the Menominee range. Of the 28 mines that sent out ore from this range during the past year not a few are of the class that has been looked upon as mined out and valueless. These will make a larger showing during the present year than they did the last and for the reason that developments on most of them were not begun till so late as to preclude the possibility of very important shipments in 1899. Besides these exhausted mines are others that have increased their production, though it had been supposed that they long ago had passed the point where increase was a possibility and the increases they have made are but the beginning of a still larger betterment the present season. Others there are, of course, that are nearing the end, and whose output is declining without the apparent possibility of improvement.

The year sees nearly all the mines of the range in the position of the Mesaba range a year or two ago, when it was predicted in this correspondence that all other ranges would soon follow that into the hands of steel makers. And while this condition is notable now, it will be very much more emphasized in another season, when the various explorations carried on by the steel companies have resulted. There are represented on this range in an important way the ore companies of the Carnegie, Federal, Steel & Wire, and Cambria concerns, as well as Corrigan, McKinney & Co., Pickands, Mather & Co., Ogalbay, Norton & Co., and some others. The mines which these interests are operating now are but a small part of the ore lands they are exploring and from which they hope to secure results of value. Indeed, though there is an immense volume of exploration and development under way it is a fact that nearly all of it is directly by steel making concerns or under such agreements that the mines, if found, will pass into their hands.

The Menominee range has been unfortunate in the possession of few mines of the Bessemer class, though there are some, and explorations now under way are likely to bring more to light. But the great bulk of the range is a non-Bessemer ore, running from 0.5 to 1 per cent. phosphorous, and there are vast quantities of from 52 to 60 per cent. iron. These ores were unavailable two years ago, but now all of them are wanted and at profitable prices. Attention has been called in this correspondence to the improvement of local conditions in the mining towns of this range, which have advanced in an almost phenomenal way in the past few months. This improvement in itself is worthy considerable mention were there space for it. But it merely indicates what is being done at the mines and prospects, and the splendid increase in the number of men employed and the output of the range. The Menominee in 1899 produced more than 700,000 tons above the year before, and that year was 600,000 tons better than 1897 and 1,000,000 tons more than in 1896. In the present year it should add to its record of 1899 not less than 400,000 tons.

Very few mines but showed an increase for the past year. Among the few that fell back were the Chapin, with a reduction of 19,000 tons to a total of 705,000. This was due to local conditions, but chiefly to water, which came in on them at times in an increased flow amounting to 1200 gallons a minute. The company's great Riedler pump handled 1700 gallons a minute, and it is likely that their old steeple pump, dismantled some time ago, may be erected for safety. The 1900 output will be ahead of any late year. The Commonwealth declined, losing 156,000 tons from its output of 250,000 tons the year before. It is about through unless something unexpected happens, and the company are now mining chiefly from other properties. They have recently secured some excellent locations that may prove large mines. The Dunn Mine has also been reduced from 49,-

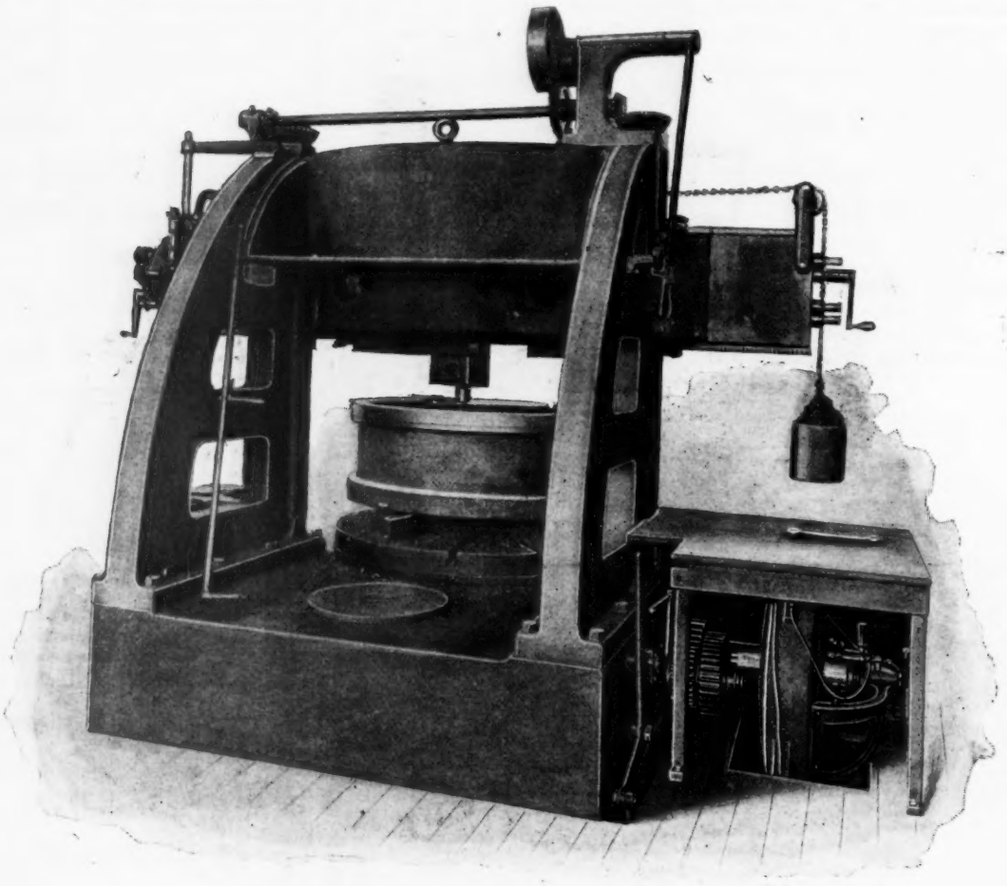


Fig. 28.—Rear View of Fig. 27.

THE MOST PERFECT MACHINE SHOP.

000 to 7000, though on account of caves during 1898 this has very little bearing on the situation. The Florence, too, is apparently reduced 20,000 tons, but of its production of 94,000 tons in 1898 practically all came from old stocks, and the 74,000 tons mined and shipped during the past year was new ore, a splendid showing. The Millie shows a trifling decrease, but this mine is a lessee on Chapin ground, and can have but short life.

On the other hand half a dozen mines have jumped from nothing to respectable outputs, such as the Lincoln, Lamont and Quinnesec mines, all belonging to Corrigan, McKinney & Co., which mined 123,000 tons in 1899, and are getting into position to make another addition the present year. The Cuff, belonging to the Steel & Wire Company, mined no ore a year ago, but shows 20,000 tons now, and is in preparation for large production this season. The Crystal Falls and Great Western, both Corrigan mines, rose from 162,000 tons to 190,000 in the year. The Sheridan, that has dwindled to nothing since 1892, put out 29,000 tons, and it, with other mines of Pickands, Mather & Co., will make satisfactory production this year. The Riverton of the Oliver Company starts with 2000 tons, Hilltop with 3000, Keel Ridge of Ogalbay, Norton & Co. with 2000, and Britol comes to the front with an output of 81,000 tons, against nothing at all since 1893, and then only a small amount. It is a Common-wealth property and is mined by open pit. It contains a large quantity of 56 per cent. ore. The Columbia has jumped from 14,000 tons the year before to 125,000 now, and with its new shaft can keep to the front. As the Mansfield decreases, this mine, owned by the same interests, will take its place. The Carnegie mine, Pewabic, has shown an advance from 305,000 tons to 530,000 in the one year, and is in shape to produce an immense volume of its lower grade ore, valuable now as a mixture for Mesabas. This ore runs 44 per cent. iron and 0.007 phosphorus.

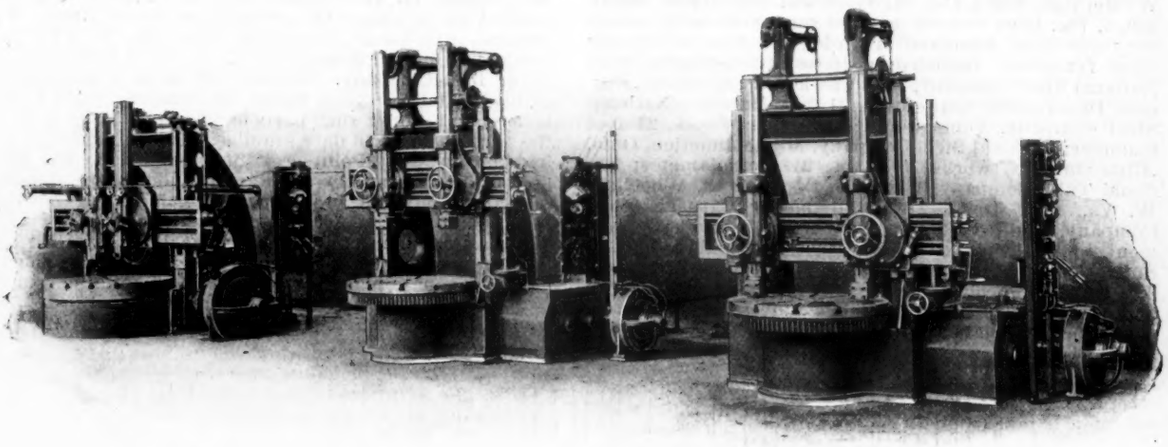


Fig. 29.—Group of Betts' and Bement, Miles & Co.'s Double Head Boring and Turning Mills.

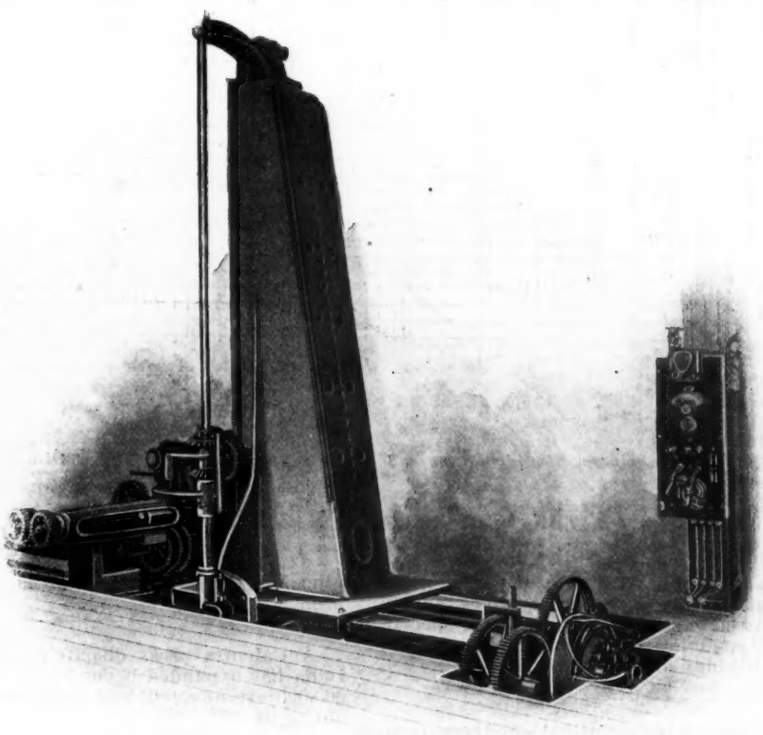


Fig. 30.—Horizontal Boring Mill, Showing Location of Motor and Panel Board.

THE MOST PERFECT MACHINE SHOP.

The extent of exploration going on along Iron River and in the Crystal Falls district, and to a less extent along the rest of the range, is not understood except by those interested. It is second only to the work under way on the Mesaba, and for the area covered could scarcely be more active. It is thorough, something that could not be said of work done in earlier years, and it is being pushed by corporations of the highest skill and financial ability seeking for ore for their own uses and not for speculation. These are people who are not crippled by a single failure and for this reason are willing to push through difficulties that would stop a smaller operator. For these reasons old and heretofore unsuccessful prospects are now developing favorably, and many good finds of Bessemers are looked for. This work

is by no means over. Options on thousands of acres have been taken lately, especially by the Oliver and Minnesota companies. No work seems too serious for these companies; the courses of rivers are changed and the secrets hidden deep in the earth are brought to light. That there are more years of prosperity for the Menominee range than the present generation will witness seems unquestionable. D. E. W.

Large Contracts for Blast Furnace Stoves — Geo. W. McClure, Son & Co., engineers and contractors, Smith Block, Pa., have recently entered some very large orders for their latest improved fire brick hot blast stoves for blast furnaces. Included in these are contracts from National Steel Company, New Castle, Pa., Shenango Furnace Department, four stoves, 21 feet diameter; National Steel Company, Youngstown, Ohio, four stoves, 21 feet diameter; National Steel Company, Mingo Junction, Ohio, Ætna-Standard works, 4 stoves, 21 feet diameter; National Tube Company, Riverside Department, Wheeling, W. Va., four stoves, 21 feet diameter; Carnegie Steel Company, Limited, Rankin, Pa., Carrie Furnace Department, eight stoves, 21 feet diameter; Republic Iron & Steel Company, Youngstown, Ohio, Hannah Furnace, two stoves, 18 feet diameter. All of these are Massicks and Crookes fire brick hot blast stoves, of the three-pass type, with latest improvements. This concern are sole representatives in the United States for the Massicks and Crookes patent three-pass fire brick stoves, and in addition to making blast furnace construction a specialty are builders of open hearth and heating furnaces, soaking pits and all kinds of brick work.

Returns of the exports of principal products from the United States during the calendar year 1899, just issued by the Treasury Bureau of Statistics, show a total value of $712,031,925, as compared with $789,995,103 in 1898. Last years' decrease of $77,960,000 is due to a falling off of $49,330,000 in the value of breadstuffs exported, mainly in wheat, and of upward of $41,000,000 in cotton exports. There was also a decrease of $4,000,000 in the value of cattle and hogs shipped abroad. On the other hand, the value of mineral oil exports last year increased to the extent of $12,430,000 and provisions increased $4,500,000.

By a vote of four to one, the Naval Board of Construction have reported adversely upon the proposition that the Government purchase the Holland submarine torpedo boat. The majority of the board holds that the boat has not advanced to a sufficiently safe stage for the Government to consider the propriety of building a fleet of such vessels. Rear-Admiral Hichborn, who formed the minority, voted for the purchase of the "Holland" on the ground that the experimental stage had been passed, and that the addition of such a vessel to the naval service was desirable. The board's action will go to the Secretary of the Navy for approval, and it is expected an effort will be made to secure the appointment of a new board, whose decision will be final.

The Red River Iron Company.— The entire capital stock of the Clarksville Furnace Company, owners of the Helen Furnace, formerly the Gracey-Woodward Furnace, at Clarksville, Tenn., has been bought by Graham Macfarlane, H. L. Williams and R. B. Hickman, who secured an option on the property in March, 1899. The furnace, which was finished in 1893, size 70 x 17 feet, was only operated three months. In April, 1899, the Red River Iron Company, composed of Messrs. Macfarlane, Williams and Hickman, leased the furnace, added Cahall boilers, and rebuilt such parts as were necessary to bring the furnace to up to date practice. The furnace was put in blast on West Point ore. Mr. Macfarlane has prospected the ore territory tributary to the furnace, developing large bodies of brown hematite, including the ores from which the famous Dover iron was made. Two McLanahan & Stone ore washers have been installed and the furnace will be operated on special low phosphorus, high manganese pig. The ores analyze: Metallic iron, 46 to 55, phosphorus, 0.07 to 0.25, manganese, 0.6 to 2. The company have large deposits of excellent limestone, running less than 1 per cent. silica. The fuel used is Stonega, Va., coke.

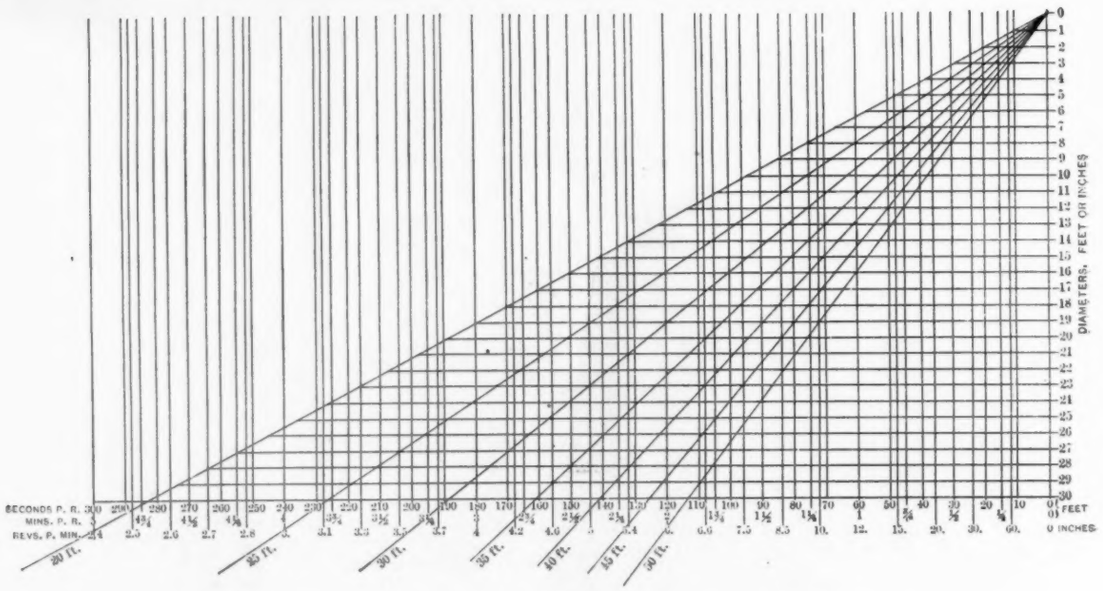


Fig. 31.—Diagram Showing Boring and Turning Mill Speeds up to 30 Feet Diameter.

THE MOST PERFECT MACHINE SHOP.

A Calcutta press dispatch says that the famine in India has expanded beyond the worst fears. About 47,000,000 are affected, and 3,250,000 are already receiving aid.

The mining and metallurgical section of the Franklin Institute held its stated monthly meeting on Wednesday evening, January 10. The following officers were elected to serve during the year 1900: Joseph Richards, president; A. E. Outerbridge, Jr., vice-president; David K. Tuttle, vice president; G. H. Clamer, secretary; Dr. Wm. H. Wall, conservator.

Dawson & Goodwin, 39 and 41 South Canal street, Chicago, have issued a list of new and second hand machinery which they are offering for sale. The list is published in convenient form, resembling in its general make-up a double postal card considerably enlarged. The list comprises lathes, drill presses, planers, turret lathes, screw machines, milling machines and a large assortment of miscellaneous tools.

The Milwaukee boiler makers recently struck for a nine hour day, $2.75 the minimum wages, time and a half on new work and double time on old work for overtime and holidays and Sundays. Several of the employers have conceded the terms demanded, which makes the strikers confident of entire success.

The Progress of the Mechanical Arts in Three-Quarters of a Century.*

BY COLEMAN SELLERS, E.D., PROFESSOR OF MECHANICS, FRANKLIN INSTITUTE.

The greatest advance in mechanics has been manifested since the advent of the locomotive. It so happens that the birth of the modern railroad system is coincident with my own birth. At that time the first railroad was put into operation in England, which development, taken in connection with the advent of the steamboat, which preceded it, was certainly the exciting cause of the great industrial advance that has since been made. Previous to 1827 wooden rails had been laid to form roads over which ore was hauled from the mines, and coal was transported in the same manner by animal traction to better advantage over common roads. Oliver Evans in our own country and other engineers abroad had conceived the idea of the high pressure steam engine, and, with the full understanding of its value, a practical traction engine to use on roads was one of the first examples of its application. It was after the invention of the road engine that the locomotive upon rails became possible.

The traction engine applied to the railroad was the basis of our present wonderful system of inland intercommunication, and its development has given an impetus to all trades. In fact, the wants of the railroads taken alone would have been sufficient incentive for what has since been done in the mechanic arts, engaging, as it has, the attention of engineers to produce the labor saving tools required for the improvement and preservation of the railroads and equipment, including the great iron and steel works that supply the rails, bridges and buildings.

Special machinery has been constantly needed to render possible such industries as iron shipbuilding, bridge and structural work, and the appliances which have been introduced in place of hand labor throughout the industrial world.

The progress of the single industry of machine tool building has therefore a most important bearing on this subject, and traced through the many stages of its rapid growth the development of this one industry would be sufficient to illustrate the progress in mechanic arts during the period in question, and especially what has been accomplished in this country.

The important relation which tools and implements bear to the mechanic arts, and in fact to all arts and crafts, forms the subject of an interesting tradition, which was published in the *Journal of the Institute* by the late Joseph Harrison, Jr. In his home at Philadelphia he exhibited a painting by Schusselle representing a blacksmith seated at the right hand of King Solomon's throne in his great temple, to illustrate a hypothetical event during the feast given in Jerusalem at the completion of the edifice. To this feast had been bidden the various artisans who had been engaged upon the construction and decoration of the building, those who had helped to shape the gold and silver and carve the ivory and weave the costly hangings that decorated its walls. There also came, unbidden and unrecognized, the swarthy smith, who, forcing his way through the courtiers and the guard to the throne of the king, claimed recognition as the one man to whom was due the creation of the entire work, for it was he who had forged the tools, without which the other artisans could have done nothing. The wise king, recognizing the justness of the claim, gave to the smith the seat of honor.

Antedating the smith of King Solomon's day and the mechanics of all times the progress of civilization can be traced by the study of the implements used in the daily life of different races of man, and prominent in the progress of the mechanic arts must be counted the tools with which work has been accomplished.

Primitive Methods.

As one instance of progress from primitive methods during the period under consideration it may be of interest to refer to the construction of one of the first large engines that were built for the city water works in Philadelphia. There is probably no one present who can recall the fact from actual memory, but where our public buildings now stand there was once a smaller structure, on top of which was a tank into which water was pumped, and this water was distributed through the then small city below Broad street by means of wooden pipes of comparatively small size. The engine used in this work was, I believe, of the Oliver Evans type of high pressure engine, the cylinder of which was cast in New Jersey. The boring bar used in boring out the cylinder was of the crudest character, operated by hand by means of levers attached to it, so that men walking around the cylinder could propel the cutting tools and gradually force the cutters on the boring bar, through the cylinder, until it had been turned out approximately true. After that the inner surface had to be filed to a sufficient degree of smoothness. Probably a month was consumed in this operation of boring the cylinder. As I shall take occasion to mention, the subsequent improvements in machine tools have changed the process of cylinder boring from an effort of days to the work of a few hours.

It may be of interest also to note that when the engines were erected and the boilers put in their place at this Center Square Station the latter were found upon test to be insufficient for their purpose. Oliver Evans had specified the length of the grate bars and the width of the furnace to be used, as also the length of the boilers, which were of the plain cylinder type, but the wise men of the city government believed that they could do better by making the boilers much longer than he had suggested, and they were so construted. Upon their failure to do the work Oliver Evans, who was in New York, was sent for in haste to correct the difficulty. His message to those in charge, enforced by his presence afterward, was that they must cut off 10 feet from the length of each boiler. This seemed a strange proceeding, but he soon explained to them that the extra length which they had added to his prescribed dimensions was acting as a condenser to reconvert steam into water, inasmuch as the heat of the furnace could not extend the whole length of the boilers as they had been built. Upon cutting the boilers down to the proper size so the heat could extend over their whole fire surface they proved sufficient for their work and continued to operate as long as this primitive water plant was in existence. I have this story from those who were living at the time.

Early Machine Tools.

The early machine tools were of the crudest workmanship and most of the lathes were made partly of wood. In fact, the transition from wood to iron in the construction of machinery was in progress during the early part of this century, and the formation of the tools themselves and much of the machinery built at that time involved the conversion of structural shapes required for wooden machines into similar shapes in metal. In the first change from wood to metal, architectural shapes and ornamentation were considered desirable to make machine tools and other machinery meet what seems to us now the rather barbaric taste of those who were to use them. The same might be said of locomotives, which almost up to the 60's were elaborately decorated with paint, polished brass and scroll work. England gave us the first good machine tools, and set the example which has tended to simplicity in design. To that country we owe much that is valuable, not only in the direction of self acting machine tools, but also in the various appliances for improving the character and quality of work to be accomplished. Thus, Sir Joseph Whitworth, one of the earliest makers of superior machine tools in England, aimed at utility and not ornamentation in the improvement of his products. It was he who introduced surface plates for producing other plane surfaces by means of the scraper; that is to say, after a surface had been made comparatively true on the planing machine it had yet to be brought to a commercially true plane by a process of scraping off the higher projections, until, when tested by one of Whitworth's surface plates, it seemed to touch at intervals of not more than ¼ inch.

After scraping had come to be recognized as the only means of making true plane surfaces, there followed unfortunately a form of deception that exists, I am sorry to say, not only in America but still more prominently in some of the copies of American machine too's produced abroad—namely, the practice of scraping the surface without any special regard to the purpose for which the operation is intended, but rather to give it the appearance of having been carefully fitted, and the surface so produced was very aptly called by the late William B. Bement of Philadelphia "bedquilt scraping." The parts touched by the scraper in this imitation work are very often not irregular in design, but constitute a set figure or pattern which cannot deceive the eye of those familiar with good work.

American Tools in England.

Long before the time of the International Exhibition of 1851 America had begun to take her place in machine tool building, under a clearly distinct line of thought that was for a long time not appreciated in other countries. When visiting England in 1884 I was shown a copy of an American planer adapted to planing the stub ends of connecting rods for locomotives, there being two sets of uprights and two cross heads with four tool holders adjustable in position to enable both ends of two connecting rods to be planed simultaneously. The American tool from which the idea was taken has its cross heads facing one another, and the table is speeded to run back and

*An address delivered in Convention Hall, National Export Exposition, Thursday, October 5, on the occasion of the celebration of the seventy-fifth anniversary of the Franklin Institute.

forth at the same rate of cut. By this means the machine is made to take a cut at each forward and backward movement of the table. The English machine had its tool holders facing in one direction and all four cuts were taken at one and the same time, only when the table was running forward, no work being done on the back stroke. The power of the American machine was therefore double that of its English copy, all other things being equal, and the maker was astonished when this was pointed out to him.

This one example shows how difficult it is to copy the machinery of another country if the copyist does not grasp the controlling idea of the mind that gave life to the original. Instances of this are found in many other directions where American contrivances, having obtained a world wide reputation, are less efficient in the foreign copy than in the original production.

The Planing Machine.

The planing machine is an invention well within my own experience. In the beginning it had the platen, upon which the work was fixed, dragged backward and forward by a chain. The first planer that William Sellers & Co. purchased and put into use was one of this chain pattern, and one was introduced in my father's shops when he undertook to build a locomotive in 1834. At the time of the Vienna Exposition, where machine tools from Philadelphia were exhibited, the engineers sent by the British Government to Vienna to note the progress that was being made noticed the broad feed cut on all the planing machines, lathes and tools that came from all parts of America, and remarked upon it as "producing good effect," as "looking well," &c., as if it were for appearances only, not knowing that it was a principle that had been established in America, thoroughly understood not only by the managers of the works but by workmen all over this country and universally adopted as necessary to good work.

Cylinder Boring Machine.

I have already referred to the slow process of boring cylinders for pumping engines. When the early locomotives were built, for example, in the Niles works in 1856, the boring of the cylinders was done on a 36-inch lathe with a horizontal boring bar, and without any knowledge as to the theory of boring in order to produce the best results. It always took two days to bore the cylinder of a locomotive of the size in use at that time, and I think the largest cylinders were not over 15 inches in diameter. In Philadelphia, when Baldwin's had advanced to a very large establishment, they still bored the locomotive cylinders in the same way. It was not until shortly before the Centennial Exposition of 1876 that attention was turned toward the utilization of a theory that had obtained in limited practice some years before as to the improvement in boring metals, the idea being that the quickest and best work can be done in boring by making the roughing cut with a fine feed, and making the finishing cut with a very broad feed but light cut that would let the cutter pass through the hole to be bored as quickly as possible so as not to wear the cutting edge in passage. That principle was first introduced when Asa Whitney of this city discovered that chilled cast iron car wheels could be made to compete with the best wrought iron ones and do a greater mileage. If the wheels cast in an iron mold were not allowed to cool naturally, but, taken red hot from the chill, were put into the annealing furnaces and brought up to a heat a little below the melting point and then allowed slowly to cool, they were bound to be free from all internal strains, while wheels taken red hot from the mold would burst into three or four pieces in cooling, showing that there was violent internal strain in metal cast in that way under the tension of the heavy chill on the outside of the tread. The problem of boring chilled wheels was solved by taking advantage of the fine roughing cut and coarse finishing feed Mr. Whitney desired to have wheels made interchangeable in their fit on the standard axles, so that when a wheel was fitted on an axle at a workshop in Philadelphia another wheel could be furnished to fit that same axle at any future time and just as well as the first one.

When the late Mr. Hudson had charge of the Rogers Locomotive Works he applied to the firm of William Sellers & Co. to have a special locomotive cylinder boring machine designed and built, saying that he had seen a boring machine designed by Mr. Grant of the Grant Locomotive Works capable of boring a 19 inch cylinder in nine hours. The matter was referred to me, and when I came to calculate the theoretical time required for boring a cylinder of the size named, on the supposition that the speed of 16 feet per minute might be used in making the cuts, with a fine feed and a deep cut for the roughing cut and a shallow cut and a much wider feed for the finishing cut, I found that the estimated time amounted to only three hours, and named three and a half hours as not only possible but what might be guaranteed as the productive output of such a machine. An order was given for this machine, it being understood that it was not only to bore the cylinders but to counterbore the ends for the clearance of the piston, to cut off the sinking head and face up the flanges at each end of the cylinder. When completed the first test was made with a 19-inch cylinder of hard close metal. This was bored in 3 hours and 20 minutes, exclusive of the time of setting the cylinder, which was not much on account of the peculiar arrangement of the machine and the facility with which the cylinder could be put in place for boring. In this case the cylinder stood still, while the boring bar traveled lengthwise, carrying the cutter head with it, and upon the two face plates of the driving heads of the machine were arranged automatic slide rests that faced off the flanges. In this design there was no guesswork, as the principle of fine feed and deep cut on roughing, with very coarse feed and shallow cut for finishing, was in common use in all operations of boring, turning and planing metals, with exact knowledge as to what result was obtainable when the possible speed of cut per minute had been predetermined for the hardness of the metal to be tooled.

The Tendency to Standardize.

The tendency to standardize everything is peculiar to this country. Builders of locomotives in America adopt standard sizes and types of locomotives, and are thus able to manufacture such to great advantage. Railroads in America are willing to take from the builders what has been shown to be good and effective, and when the same kind of machine is to be duplicated many times the maker can afford to invest heavily in special gauges and special tools that decrease the amount of manual skill required in laying out the work or working to drawings. The first time a piece of work is done, whether it be small or large, simple or complex, more time is spent upon it than after the workmen have become familiar with its construction, and certainly more time than would be required after special appliances have been invented and made to cheapen the product, especially when the men are paid for their work according to the quality and quantity turned out, and not by a fixed wage per diem. I allude to this because I know it is the custom of foreign railroads to submit to builders in England and America specifications for engines that cannot compete in economy of construction with those that are built in quantities in the way that I have just mentioned. It is the recognition of this fact that is now opening the markets of Europe to American locomotives as they are built and as they are used in America. A celebrated builder of locomotives in England told me that the rules of the Board of Trade and Parliamentary regulations for the safety of the people crowded their locomotives with useless appliances. A close observer of railroad machinery, who is familiar with the principal railroads in the world, has stated that if a locomotive builder abroad is given a new problem, such as to construct a hill climbing freight engine, or a goods engine as it is called abroad, or even an express passenger engine for mountain districts, a completed machine may be the result that is a model of strength and durability, but inacessible in the extreme when ordinary repairs are required. It is easier to take out the cylinders in an American engine and replace them with new ones than it is to reset the valves on the type in general use abroad, where the valve chests are crowded together under the smoke stacks as though they would never require adjustment or resetting. The persistency evinced in adhering to the crank axle in English engines, in spite of its weakness, is one of the matters not understood in this country. Give accessibility to the valves and ready access to all the parts and the whole engine will be better cared for by those in charge of it.

It has been the scientific methods introduced by the managers of the railroads, aided by the skill and perfect equipment in their workshops, that have made those great railway systems what they now are. They must exercise the utmost caution in all that they undertake; every alteration or deviation from adopted standards involves so many pieces that must be changed. In regard to the simple matter of making brake shoes for the cars and boxes for axle journals I know from my own experience that it was not until the introduction of machines for molding these pieces accurately that the best results could be obtained and the parts made exact and perfectly interchangeable. Every invention, whether it be in the foundry or in the machine shop, is cumulative and has its effect upon other trades, and through our ingenuity and progress we have now reached a point when the whole world looks to America for certain work which it seems cannot be done to equal advantage in other countries.

Dr. John Anderson, then in charge of the Woolwich Arsenal, England, was sent to this country to visit the Centennial Exhibition in 1876, and besides acting as one of the judges of the machine tool exhibit he made an official report as British Commissioner to both Houses of Parliament. Prominent in these reports there will be found one on "Machines and Tools for Working Metal,

Wood and Stone at the Philadelphia Exhibition," in which the following statement occurs:

"Great Britain certainly can claim the credit of having been the birthplace of modern machine tools and has done wonders in raising the mechanical standard of perfection, and her influence for good in the advance of civilization thereby is incalculable; but when we consider the enormously greater area of the American continent it is a matter of vast importance that tools have taken such a hold of the American mind, which will influence the civilization of the Western world for ages to come and will exercise a powerful effect, not only on that continent but on Australia, China and the world generally." This therefore has a profound significance which can scarcely be overrated. Again he said: "The display of machine tools made by the United States was so vast that only the more salient points can be noticed in a brief report. It showed certainly that the past century has not been passed in idleness, and, judging by the enormous stride made by them during the past few years, it showed that they have been intelligent students of the best European authorities. It is true to say, however, that the Americans as a rule are not copyists; the inventing of clever devices and tools for saving labor seems to be their natural forte and worthy of the old stock, probably quickened by the peculiarly favorable circumstances under which they live. It was the display made in this section which most conspicuously brought out the enormous strength of America as a producing power. More than 100 exhibitors had each a large exhibit that commanded the admiration of all that took the trouble to examine them in detail. In this vast array were machines for all purposes, small arms, ammunition, sewing machines, clocks, watches and all the branches of machine making and engineering, and almost all were finished in a style superior to that of any former exhibition."

Technical Education.

In the engineering practice of the first quarter of this century scientific methods did not obtain. There was little technical literature to help the designer, and the best results which have made American ingenuity appreciated the world over were brought about through careful experiments and earnest effort on original lines. The history of the steam engine, so far as the American types are concerned, was clearly not the outcome of the books, for what is thus taught under the head of thermodynamics is really a description of what had been accomplished rather than the cause of the development. The need of technical education was early felt, but the want was not supplied until the generosity of individuals rendered the foundation of mechnical schools possible. The Government cannot be looked upon to aid in such institutions in the United States as it can in England, yet up to 1884 in London there was no technical school in existence that in any way compared with those at Hoboken and Boston in this country, besides which engineering is now taught in our universities. At a dinner given to the members of the Institution of Civil Engineers in 1884 Sir Lyon Playfair, in responding to the toast of "The Universities of Scotland," after those of England had already been discussed by able speakers, astonished his audience by refusing to speak to the toast directly and entered a strong plea for technical education in England such as existed at that time in the United States. He said they should not look to Germany and France for the examples of technical schools, but across the Atlantic, where those speaking their own language had already put into practice what England had so long needed. While the speaker was doubtless correct as to the wants at that time in Great Britain, the technical school of South Kensington was then being organized and the guilds of London had contributed freely toward its support. Good work had been done by this and other schools and by the trade schools that have been established in various parts of England.

We are long past the period of empirical work. The steel makers and iron founders now depend upon metallurgists to guide them, while every well equipped machine shop in the country must have its staff of educated men who are able to reinforce the practical knowledge of those engaged in manufacturing by exact mathematical methods that in the early stages of our profession were limited to simple arithmetic.

English Workmen.

As indicative of the necessity of education on the part of the working classes, I have known instances in which labor saving machinery that was cheapening the output in a particular class of hardware in America, when introduced into England failed entirely and brought discredit to the member of the firm who had advised its purchase. A gentleman interested called upon me afterward and solicited letters enabling him to visit some of the industrial establishments in the United States. Upon his return from these places he told me that all that had been said about the character of the work done by the machinery in question not only had been confirmed but that its merits had been underestimated. He said, however, that in his opinion it was impossible to utilize it to advantage with the workmen in England, owing to trade prejudice and trades union regulations. What the peculiar conditions were I am unable to say, but what I wish particularly to impress upon my hearers in this respect is that in his opinion the difference in the character of our workmen and workmen of the same trades in England is wholly due to the better education of the Americans, who are fully two generations ahead of those abroad. It is perfectly evident that it is impossible to raise the standard of work by means of labor saving machinery unless the workingmen themselves will see the advantage derived from their ability to do more and better work and thereby obtain better wages. This is particularly the case when they are called upon in this country to operate machines that do not require constant attention, but where it is possible for one man to attend several machines and earn higher wages than he possibly could if compelled to stand idly watching a machine that required but a small portion of his time to operate. There would be no inducement to contrive automatic machinery unless those who use such machinery are able without prejudice to take advantage of the saving in labor attainable thereby.

Shipbuilding all over the world, since the first iron vessels were launched, shows by the constantly improved output the wonderful progress in scientific knowledge and in manual as well as technical skill. The great fighting machines for the ocean have been improved with astonishing rapidity. This year our own output in that line has for the first time been tested and found good, when handled by men of whom we as a nation may feel proud. The nations have been increasing the power of their fighting ships year by year, adding new improvements in machinery, new means of resisting attack from other ships, new guns and newer projectiles to pierce the new armor plate, and let us hope with decreasing opportunity to bring the results to actual test in battle. In our own recent experience practice at great cost found our trained marine force better equipped for the operation of these fighting machines, and in the far East and in the West Indies our guns swept a maritime power out of existence with upon our part scarce the loss of a man.

Forging Presses.

In working iron and steel the introduction of the Whitworth forging press marked an important advance compared with the costly steel hammers, and hydraulic presses became absolutely essential in perfecting the American type of link and pin bridge construction. Some of the forgings required for the 5000 horse power dynamos needed by the Niagara Falls Power Company could not have been executed by means of any existing steam hammer in this country or elsewhere, and the Bethlehem Steel Company were the first to introduce this system of forging on a large scale. Forging by pressure in place of impact by hammers enables the force required to cause a given deformation of metal to be accomplished with the least expenditure of power and greater exactness, as was soon manifested in the readiness with which hollow shafts were produced. About 1893 the work at Niagara Falls called for steel rings of absolutely uniform density, having an outside diameter of 11 feet 4 inches, with a width on the face of approximately 50 inches and a thickness of over 5 inches, which necessitated the use of a press of greater capacity than any heretofore erected. The press at Bethlehem, combined with the Whitworth system of compressed steel ingots, was taxed to its utmost to make what was needed in this case. It is interesting to note that this work was the first product of machinery introduced mainly to furnish armor plates and the massive steel forgings needed for our modern ships of war.

Niagara Falls Power.

The plant of the Niagara Falls Power Company offers evidence enough of the remarkable progress that has been made, not only in the mechanic arts but in the high scientific ability required to design machines that had no precedent in size or in exact requirements as expressed in the specifications predetermining each requirement as to the results to be accomplished. Thus the designers of the dynamos were called upon to guarantee an output from each unit of power with so high an efficiency that all the magnetic and electric losses in the machine would not amount to over 2½ per cent. This requirement was fulfilled, and when subsequent machines were installed the result was even more favorable than in the first instance. The final result is the crucial test of all progress, and certainly we have in those of our industries which require mechanical skill sufficient evidence of the marvelous progress that has been achieved during the past 75 years.

As I have taken occasion to mention the work at Niagara Falls, which has engaged so much of my attention, it may interest those who are not familiar with the results of this undertaking to hear something further in

regard to it. At Niagara Falls we had for the first time to construct a tunnel that would be adapted as a tail race to the development of 100,000 horse power. The International Niagara Commission had decided that 5000 horse-power was to be the unit, and the plant was accordingly laid out on this basis. It was assumed that water wheels could be made of that capacity and could be placed 150 feet below the level of the dynamos to be operated, where, as one of the commissioners suggested, the length of shaft would be about the same as between the propeller and engines of an ocean steamship. In the practical solution of this problem we were obliged to have similar thrust bearings to guide the shaft, but the construction of the turbines is such that the water under the upper wheel of the two in the case is made to support the whole mass of 160,000 pounds. The dynamo at the upper end of the shaft therefore practically spins on a cushion of water with only a pressure of 3000 more or less on the thrust bearing rings, according to the variations in the velocity as the power developed is increased or decreased.

It is too large a subject to permit me to refer in detail to all of the work that had to be done at Niagara Falls, but I want to say that, while our constant effort has been to interest the manufacturers of machinery to make designs that they could guarantee, a great deal of designing has been necessary by the engineers of the company, most of which was experimental, and that no failures should have been experienced is most satisfactory, when I realize how little precedent we had to guide us and the risk attending the solution of the problem as it was presented to me.

The first three turbines that were installed in accordance with the design of the builders had to be materially altered, and I have introduced improvements of my own invention to enhance their efficiency as far as the shaft transmission is concerned. These modifications were made in the five units that were subsequently installed, and without any change in the water wheels the efficiency was increased so that they delivered 5500 electrical horse-power each instead of 5300 horse-power, which was the output before the changes were made.

As now constructed all the electrical and magnetic losses in each of the dynamos aggregate but 2½ per cent., and you can judge what the efficiency of the water wheels must be when those which, at 75 per cent. efficiency, would give 5300 horse power, are now driving dynamos that deliver 5500 horse power without any changes in the wheel, but only such alterations in seemingly immaterial parts as the design of the connection between the water wheels and the dynamos.

As regards the utilization of the power being developed at Niagara Falls, it may interest you to note that we hope shortly to have ten dynamos running, each of 5000 horse power nominal capacity, but actually capable of delivering over 5000 horse-power each.

The first industry established in connection with the plant was a paper company, who required 7200 horse-power, but they installed their own wheels on land of the Power Company and utilized the latter's tunnel and canal facilities. Next followed the Pittsburgh Reduction Company, who take 8550 electrical horse-power for the manufacture of aluminum. The Carborundum Company, for making abrasives, take 1030 electrical horse power. The Union Carbide Company, 5000 electrical horse-power for the manufacture of carbide of calcium. The Niagara Electro Chemical Company, making peroxide of sodium—that is, metallic sodium—take 400 electrical horse power. These and other works now in operation or being installed will utilize, possibly by the first of next year, a total of 41,000 horse-power. Most of these establishments are electro chemical or metallurgical in their processes and have sprung into existence with the development of hydro-electric power, although they are based upon principles which were discovered years ago. The metal sodium, for example, is made commercially by practically the same process as was employed by Sir Humphrey Davy when he first began experimenting with the galvanic battery for the reduction of metals. The alternating current that has been adopted in the machines that generate this electricity is the alternating current as studied by Michael Faraday. The change in the potential from 2200 volts at the machine to 11,000 volts in transmission is effected by the transformers that were discovered by Faraday, and were formelry used chiefly in Ruhmkorff coils and other philosophical instruments. The principle as known then became useful for lighting purposes when the alternating current took its place in the lighting of cities.

In the problem presented at Niagara Falls we had to provide for direct current to operate railroads and for electro metallurgical purposes. This power is developed as alternating current and transformed from two phase into three phase by an invention of C. F. Scott of the Westinghouse Company.

It is a noteworthy fact that since the wheels were started in 1895 there have been no stoppages of more than an hour or two at the most. The plant has been in operation night and day, carrying on processes that permit of no interruption on account of the loss which would result.

Reviewing the century's progress one cannot but be impressed with the tendency to specialize all industries. It has been truly said that jobbing shops are and always will be a necessity, but that manufacturing establishments will lead in the march of improvement. Trades are becoming more diversified and time, talent and capital are being expended upon individual machines and appliances as special which were formerly but a part of the output of single establishments. To this concentration of the best thought upon special branches of all industries we may attribute much of the progress in the mechanic arts made during the past 75 years, which has opened the markets of the world to the products of our industry. The influence of the Franklin Institute has played no small part in this progress, and as one long identified with its work I extend my greeting to its members, hoping they will continue to advance the usefulness of an institution which worthily bears the name of one of the greatest philosophers that America and the world has produced.

Central Pennsylvania News.

HARRISBURG, January 22.—There has been a distinct improvement in the conditions affecting the iron and steel industry in this district during the last week. The coal shortage has been largely overcome, and while there is still some difficulty in keeping up the necessary supply of coke, owing to the car famine, the situation is better in every way than it was at the opening of the year. There is also an improvement in the general tone of the market. It is not characterized with so much halting and uncertainty. The demand is more spirited and the prices are well maintained. Several large orders have been booked by the Pennsylvania Steel Company, but pending the final closing of the contracts all information concerning them is withheld. This week shipments will be commenced by this company on a considerable order for Cuba, the Havana Electric Railway Company having placed recently an order for 3000 tons of girder rails.

The Lalance-Grosjean Mfg. Company begin double turn this week, and the outlook is promising for a steady run of all the mills. The great plant of the company at Woodhaven needs all the plate the mills here can make.

The Harrisburg Foundry & Machine Works have closed the most successful year in their history. This plant is now one of the most prominent of the industrial concerns in Central Pennsylvania and appears to have carved a place for itself in the engine making world. Both plants—the new and old—are in constant operation, with orders sufficient to keep them going until next summer.

Unless the Susquehanna Iron & Steel Company erect the proposed pipe mill it will be necessary to change the character of at least two of the mills. They produce skelp iron and the National Tube Company do not offer the price that the company demand for this kind of iron. But in spite of this drawback the Susquehanna mills are said to be making plenty of money.

The Central Iron & Steel Company's plant is running regularly now and the prospects are favorable for the rest of the winter. It is admitted by most iron and steel men that contracts must be closed with great care owing to the high prices of certain kinds of raw material.

The Lochiel Furnace Company have elected these officers: President, James M. Cameron; secretary and treasurer, H. B. McCormick. The directors are the officers named and Henry and Vance McCormick, B. Dawson Coleman, Edward R. Coleman, Spencer C. Gilbert, James P. Scott and George D. McCreary.

The Kelley Car Coupler Company will hold their annual meeting in this city next week. The patent coupler being manufactured by this company has already been adopted by several railroad corporations.

George E. Miller, who invented a recessing tool which revolutionized the old method of tapping and recessing couplings, has just recovered from the American Tube & Iron Company at Middletown, in a suit for damages, $4800. He asked for $20,000, but the jury only found for the amount stated. Miller set up the claim that the company had agreed to pay him a fixed amount for the use of the patented tool.

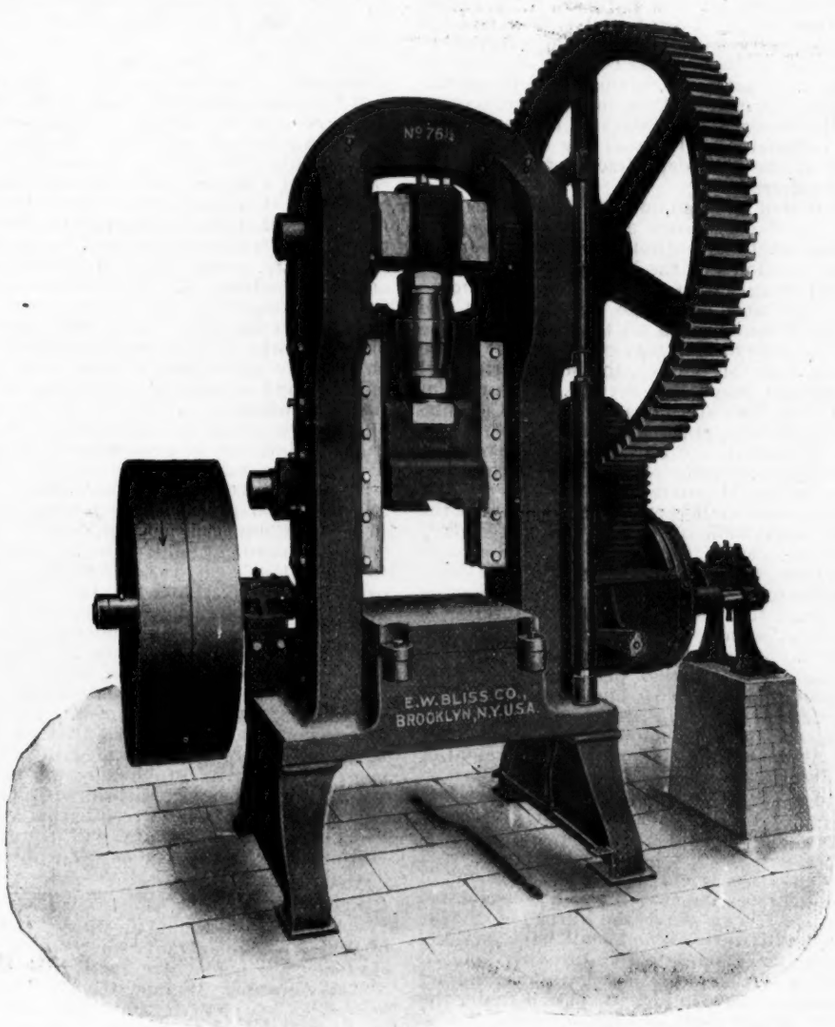
The new buildings of the reorganized Harrisburg Pipe & Pipe Bending Company are now under way, the old buildings of the Harrisburg Car Mfg. Company, which were purchased with the land by the pipe company, having been removed. The enlarged plant of the pipe bending company will give employment to many more hands.

S.

An application has been made to the United States Supreme Court on behalf of the State of Missouri for leave to file a bill praying for an injunction against the State of Illinois and the city of Chicago to restrain them from operating the recently opened drainage canal.

The Bliss Double Geared Press.

The large double geared press built by the E. W. Bliss company, 11 Adams street, Brooklyn, was specially designed for cutting iron blanks cold, 12 inches in diameter by ¾ inch thick. The dies are then changed, the blanks are heated and drawn into a cup shape about 6 inches in diameter by 3 inches deep. The press will easily do this, and is, of course, also adapted for a wide range of work requiring a heavy duty. The stroke is 8 inches, but if a shorter stroke is used a blank thicker than ¾ inch can be cut. The press has an automatic and hand actuated friction clutch and outboard bearings on the back shaft. The ratio of gearing is 1 to 25. The right and left hand screw connection has an adjustment of 4 inches, is steel, 6 inches in diameter, and is bronze bushed in both the crank and wrist pin connections. The crank shaft is forged steel, 7 inches in diameter. The wrist of the connection is machined to the segment of a circle corresponding with its seat in the slide, thus making a mass of solid metal between the dies and the crank. The slide is very long, is well fitted, and is guided in ways which extend as far down as practicable, thereby supporting the slide its entire length while the dies are doing their work. This feature will commend itself to those who have costly dies to operate in such a press. Another important feature is the automatic friction clutch, mentioned above, which is so arranged that the operator can set dies and change the tools without pulling the fly wheel around by hand, as the clutch can be so nicely handled that one man is able to do all of this work, even on the largest and heaviest dies that can be used in the machine. The net weight of the press as shown is about 22,000 pounds.



THE BLISS DOUBLE GEARED PRESS

The Russian Consul in New York City has received notice that the last link in the Amoor section of the Trans-Siberian Railroad has been completed, and trains are now run to Habarofsk, on the Amoor River.

The Department of Commerce and Industries.

WASHINGTON, D. C., January 23, 1900.—So much progress has been made within a few days in advancing the measures pending in Congress providing for a new executive department, to be known as the Department of Commerce and Industries, that there is now a fair prospect that one of these measures will be enacted into a law during the present Congress, though heretofore there has been but little expectation that the creation of an additional cabinet office would be authorized in the near future. The general revival recently experienced by the leading industries of the country has done much to emphasize the importance of the reorganization of the present distribution of bureaus, and the proposition to solve the problem by the establishment of a new department is receiving very close attention from the leaders in both Houses.

The sub-committee of the Senate Committee on Commerce is now engaged in framing a favorable report upon the most comprehensive measure for the establishment of the new department that has ever been brought forward. During the last Congress a bill was introduced in both Houses, but no serious attempt was made to secure its passage. At the beginning of the present Congress, however, the matter was taken up anew with much vigor. Both Senator Frye of Maine and Senator McComas of Maryland introduced bills in the Senate, and Mr. Roberts of Massachusetts presented one in the House, the general purpose being to gather together under one head all the bureaus of the Government now connected with the Treasury, State and Interior Departments not germane in their functions to the purpose for which the departments were originally erected. These measures were referred in due course to the Senate Committee on Commerce and were taken up by a sub-committee, of which Senator Nelson of Minnesota is chairman. After careful consid-

eration Mr. Nelson has prepared a substitute bill, which he will report to the full committee and which will probably be adopted and sent to the Senate with an urgent recommendation for its passage. The function of the new department, as provided by the Nelson bill, is set forth as follows:

"That the said Department of Commerce and Industries shall have general jurisdiction over the foreign and internal commerce of the United States, except the collection of revenue and the administration of the customs and internal revenue laws; it shall have general jurisdiction over all matters pertaining to transportation facilities by land or water, except in cases under the jurisdiction of the Interstate Commerce Commission; it shall also have general jurisdiction over the Geological Survey, the mining industries and the fisheries industries, including the fur seal and other fisheries of Alaska; it shall also have general jurisdiction over all that pertains to the manufacturing industries of the United States, including the securing of foreign markets; and it shall also have general jurisdiction over all the matters committed to any of the bureaus, offices, departments, branches of the public service by this act transferred from other executive departments of the Government to the said Department of Commerce and Industries, as fully as the same is now possessed by any of the said departments from whence the same is so transferred."

The consolidation of a large number of bureaus now attached chiefly to the Treasury and Interior Departments, but having functions entirely foreign to them, is provided for under section 4 of the Nelson bill as follows:

"That the following bureaus, divisions and branches of the public service now under the jurisdiction of the Department of the Treasury, and all that pertains to the same, known as the Life Saving Service, the Light House Board and the Light House Service, the Marine Hospital Service, the Steamboat Inspection Service, the Bureau of Navigation and the United States Shipping Commissioners, the Bureau of Immigration, the Bureau of Statistics and the United States Coast and Geodetic Survey, be, and the same hereby are, transferred from the Department of the Treasury to the Department of Commerce and Industries, and the same shall hereafter remain under the jurisdiction and supervision of the last named department; and that the office of Commissioner of Railroads and all that pertains to the same, and the Census Office and all that pertains to the same, be, and the same hereby are, transferred from the Department of the Interior to the Department of Commerce and Industries, to remain henceforth under the jurisdiction of the latter; that the Department of Labor and all that pertains thereto, and the office of Commissioner of Fish and Fisheries and all that pertains to the same, and the fishery industry of the United States, be, and the same hereby are, placed under the jurisdiction and made a part of the Department of Commerce and Industries; that the Bureau of Foreign Commerce now in the State Department be, and the same hereby is, transferred to the Department of Commerce and Manufactures and consolidated with and made a part of the Bureau of Statistics, hereinbefore transferred from the Treasury Department to the Department of Commerce and Industries; and that the said consolidated bureau shall hereafter be known as the Bureau of Statistics of Commerce and Industries, and shall have jurisdiction over and compile all statistical information and all statistics pertaining to commerce, navigation, manufactures and the various other industries placed under the jurisdiction of the Department of Commerce and Industries; and that the chief of said bureau shall be appointed by the President, by and with the advice and consent of the Senate, and shall hold his office for the term of four years, unless sooner removed by the President, and shall receive the salary now provided by law for the chief of the Bureau of Statistics in the Treasury Department; that all the consular officers of the United States, including consul-generals, consuls and commercial agents, are hereby required, and it is made their duty, to send copies of all the reports made by them to the State Department, except so much as relates to diplomatic affairs, to the Department of Commerce and Industries."

In addition to the consolidation above provided for the Nelson bill proposes to establish a new bureau, with functions of the highest importance, to be known as the Bureau of Manufactures, "to have charge under the direction of the secretary of the department of the manufacturing interests of the United States, to gather, compile and publish information in respect to the same, and information in respect to securing markets for our products abroad, and to assist in developing and expanding the manufacturing industries of the United States and the markets for the same." The chief of this department is to be appointed by the President and confirmed by the Senate and will receive a salary of $3000 per annum. As to the importance of this bureau Senator Nelson, in a report which he is preparing for submission to the full committee, says:

"It is to be noted that in none of the departments of the Government have we any bureau or division of the public service to which is committed the supervision of the manufacturing and mining industries of the country—two very important branches of our industrial life. In view of our great progress and development in manufacturing industries, which now far exceed the ability to supply our own wants, and in view of the urgent necessity of securing more extensive markets abroad, it must be apparent to any one who gives the subject the least thought that there is an urgent demand for the establishment of a department of the public service to have the charge of and to aid in our industrial development, and to secure us better and more extensive markets abroad. This fact is now and has for many years been recognized by all the principal commercial bodies throughout the country, and there seems to be an urgent demand throughout the industrial world for such a department. Most of the other great governments of the world have a department of this kind. England has her Board of Trade, France her Minister of Commerce, Industry and Telegraphs; the Netherlands, a Minister of Public Works and Commerce; Austria-Hungary, a Minister of Commerce and National Industries; Italy, a Minister of Commerce, Industry and Agriculture; Spain, a Minister of Commerce, Agriculture and Public Works; Portugal, a Minister of Public Works and Industry, and Russia has just established a Ministry of Commerce and Industry, instead of having it as heretofore a branch of the Finance Ministry. In all of these governments the fact is recognized that a department of this kind is essential and necessary for the care, promotion and development of commerce and manufacture. The United States, in order to be on a footing of equality and in order to be fully equipped to enter the competitive field with the strongest nations, ought to take a lesson and be guided by these examples. In order to make such a department comprehensive and effective and in order to fully equip it with all the necessary appliances to execute its great task and purpose, it ought to be vested with all the branches and departments of the public service relating and germane to the subject of commerce, manufactures and other industries."

It is proposed by the Committee on Commerce that the new department shall be located in the large building in Washington occupied until quite recently by the Post Office Department, and under this one roof it is intended to bring together the numerous bureaus now scattered over a wide area. Thus, it is estimated that the establishment of the new department will add but $25,000 or $30,000 to the annual expenditures, the chief item being the salaries of the new secretary and assistant secretary and the chief of the Bureau of Manufactures. It is also predicted that the consolidation of the various bureaus will result in a reduction of the whole clerical force, as much work is now unnecessarily duplicated. The committee therefore feels justified in asserting that the expenses involved in establishing the new department will be insignificant in comparison with the great work to be done and the important results that can be obtained. It is expected that an attempt will be made to secure consideration of the bill as soon as the pending financial measure has been disposed of.

W. L. C.

The twentieth annual meeting of the Engineers' Society of Western Pennsylvania was held in the lecture room of the society's house, 410 Penn avenue, Pittsburgh, Pa., Tuesday evening, January 16. The report of the treasurer of the society showed that there was a surplus of $500 over expenses and an increase of membership to over the 400 mark. The new officers elected for the ensuing year are as follows: President, one year, W. A. Bole; vice-president, two years, C. F. Scott; directors, two years, Gustave Kaufman, C. B. Albree; secretary, one year, R. A. Fessenden; treasurer, one year, A. E. Frost. The president, Harry J. Lewis, read his retiring address, in which he touched on the changes in the economic conditions which have taken place during the last 20 years. At the regular monthly meeting which followed the principal business consisted of the appointment of a committee to devise means for the purchase of a permanent home for the society. It was suggested that the surplus of $500 be reserved as a nucleus for this fund and a number of liberal subscriptions, amounting in all to $500, were made by members present. It is thought that within a few months a sufficient sum will be secured to render the purchase of a new home certain.

The location of guns loaded with smokeless powder has been found a matter of considerable difficulty in the present South African campaign. W. Lascelles Scott points out that by the aid of blue glasses, colored by oxide of cobalt, the smokeless flash can be easily detected. This cuts off all light proceeding from the red and yellow rays of the solar spectrum, and especially those of the so called D line of the sodium flame. The accuracy of Lascelles Scott's statement is, however, disputed by experts.

The H. W. Caldwell & Son Company.

A recent issue of the *Western Electrician* describes the new plant of the H. W. Caldwell & Son Company, Chicago, manufacturers of conveying machinery. The special feature of this plant is that electricity is depended upon entirely for operating the machinery and furnishing light. It is located between Seventeenth and Eighteenth streets, west of Western avenue, and occupies about 2½ acres of ground. The buildings erected comprise shops for the machinery department and the conveyor and sheet metal department, with a power house. Room has been left for a foundry and other buildings, to be erected as occasion requires. The power house is at present equipped with boiler and engine capacity to run the plant as it stands, provision being made for additions as the other buildings are erected. The power house, which is built of brick and is 68 x 73 feet, contains two 175 horse-power Geary water tube boilers and a 100 horse-power Allis-Corliss engine belted to a 100 kilowatt Northern electrical generator. From the power house ten lead covered cables are conducted, eight of which pass in a conduit to the machine and conveyor shops and two overhead to the trolley wire of the electric crane in the same building.

The machine shop is of steel construction, with brick walls and a steel trussed roof. Its dimensions are 106 x 180 feet, with an extreme hight of 67 feet. A gallery extends along both sides and one end, which is used partly for office purposes and partly for pattern making, the storage of supplies, &c. In this building are installed five motors for operating the machines. They are mounted on brackets on the wall and belted to shafting, from which belts run to the machines. These are placed in groups according to the special class of work they have to perform, so that when a department is shut down the motor running that department can be stopped. The largest motor in this shop is of 15 horse-power capacity and drives small lathes, a pulley machine and shapers. A 10 horse-power motor drives a large lathe, a bolt threader, drill presses and other machinery. Another 10 horse-power motor drives a boring mill, planers, cutting off tool and milling machinery. A 7½ horse-power motor operates an elevator traveling between the main floor and gallery, which is 10 x 20 feet in size and has a lifting capacity of 3000 pounds at 50 feet a minute. A Pawling & Harnischfeger electric crane, having a span of 47 feet 10 inches, a 40 foot hoist and a capacity of 20 tons, travels the full length of this building and can be run out of the south end to a position directly over the railroad track, which enables heavy machinery to be loaded or unloaded without the necessity of extending a railroad track within the building. The arrangement of this crane runway is novel. When the crane is run out of the building it shoves out ahead of it a part of the wall, which is constructed to move on rollers, the framework supporting the whole weight being connected above with the framework of the building.

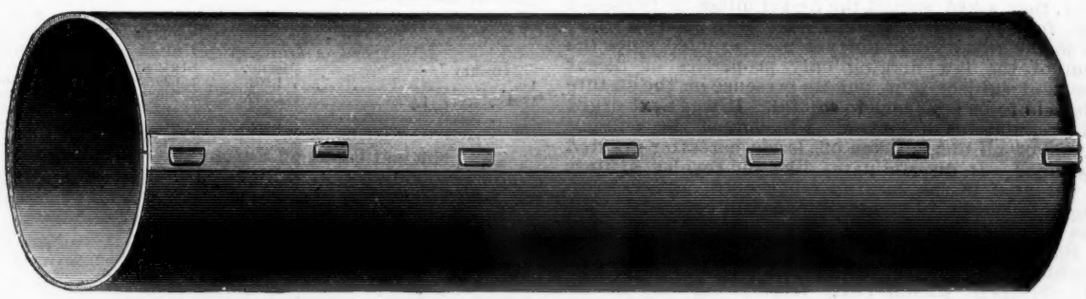
The principal line of manufacturing of the H. W. Caldwell & Son Company comprises conveying, elevating and power transmitting machinery, and in this building is made the Caldwell helicoid conveyor, the product for which the company are probably most noted. This conveyor consists principally of a spiral rolled from strips of hot steel. Two hot metal rolls are used to roll the strips, each machine being directly driven by a 25 horse-power motor, operating at about 500 revolutions a minute. The connection is made between the motor and rolling machine by means of a rawhide pinion and cut gear, the reduction in the gearing giving the rolls a speed of about 150 revolutions a minute. These rolls are made by the Caldwell Company, and are said to be the only machines of their kind in the country. The steel strips from which the spirals are rolled are heated by oil in double ended 20-foot furnaces by means of the National Supply Company's system. The pressure blowers for these furnaces are driven by means of motors. The other motors in the rolling mill consist of three 5 horse power machines, which drive drill presses and special machinery for the manufacture of conveyors. All the motors are furnished by the Northern Electrical Mfg. Company, Madison, Wis.

The two shop buildings are heated by means of the Sturtevant induced blast system. Air is drawn through steam coils and is then blown through galvanized conductors to different parts of the buildings. In the machine shop there are two fans, each driven by a 6 x 9 inch steam engine and in the rolling mill a single fan is driven by a 6 x 6 inch engine. The engines are supplied with live steam from the boiler house. Their exhaust, as well as most of the exhaust from the large engine in the power house, is turned into the steam coils. In the three-fold heaters it is estimated that there are 17,658 feet of pipe. The heating system is guaranteed to change the air every 20 minutes and to maintain a temperature in the shops of 65 degrees and 70 degrees in the offices, with an outside temperature of 10 degrees below zero. Part of the exhaust of the main engine is used in a 400 horse power Colles open feed water heater placed in the engine room. The condensation from the heating coils is returned to this heater and then to the boilers. In the boiler room is a hot water heater, which supplies hot water for washstands in different parts of the shops—a convenience that is greatly appreciated by the employees.

The plant is lighted both by arc and incandescent lamps, the arc lamps being used for general illumination and the incandescent for individual lighting of the machines and for lighting the offices and power house.

The tracks of the Chicago Junction Railroad connect the plant with all lines running in and out of Chicago.

The architect and consulting engineer, who designed the buildings and equipment, is W. L. Stebbings of Chicago. The consulting electrical engineer is Charles A. Pratt.



THE BISCHOFF CLINCHED PIPE.

The Bischoff Clinched Pipe.

The accompanying illustration shows a section of clinched pipe, manufactured by the Statler-Bischoff Company, 1229 to 1245 Fillmore street, Chicago. This pipe is made without rivets, being clinched by lugs cut on both the edges of the original sheet, which are then passed through holes in an exterior strip, and by being pressed flat, finish the pipe. The processes used make a pipe of very great strength in comparison with the weight of material used. It is turned out in lengths of 10 feet or less, in any size from 3 to 16 inches in diameter, and of any gauge of sheet steel, even as heavy as No. 8. A sheet steel pipe with invisible inside joints has long been demanded for special uses, and this pipe has been brought out for that purpose. It is especially adapted for use in connection with ventilating blowers, heating apparatus, air compressors, and also in mining or in conveying oil or water. It is furnished in either black, asphalted or galvanized, and with all needed connections, such as crimped elbows, cast iron collars, cast iron elbows, &c.

The Baldwin Locomotive Works of Philadelphia have obtained another large order for engines from France. The order is for 30 large ten-wheeled engines for the Paris & Orleans Railway and is the first contract for locomotives ever placed by the company with an American firm.

La Société des Fers et Aciers Robert of Paris, France, have increased their capital from $800,000 to $1,600,000 for the purpose of developing the furnace plant recently acquired by them at Outreau, France.

Canadian News.

An Ontario Minister at Sudbury.

TORONTO, January 19, 1900.—Hon. E J. Davis, commissioner of Crown lands in the Ontario Government, and Archibald Blue, director of the Ontario Bureau of Mines, were in Sudbury on the 17th inst., their visit being for the avowed purpose of learning what the opinion of that mining locality was in respect to the new nickel regulations of the Government. They were entertained by Mr. McArthur, Mr. Turner and Captain Lawson, officials of the Canadian Copper Company. They visited the company's works. At Copper Cliff, 3 miles from Sudbury, they saw six mines in operation on a large scale, all the mines being equipped with power and hoisting plants. They saw the cold blast furnace and the new reduction plant erected on the hot blast principle, which is now being experimented with. One thousand men are engaged in the industry and the monthly pay roll is put at $30,000. Last year's production of matte is said to have been from 25,000 to 30,000 tons. After showing the minister and the director over these works the Reception Committee pointed out that there was plenty more mineral land as good as that of the Canadian Copper Company, which would maintain works equally great if only the mining regulations were of the right kind. At a public meeting in the evening these points were strongly pressed home by local speakers. The mining laws were criticised with great frankness. First, it was demanded that the nickel royalty be totally abolished. At present the royalty is a discriminatory tax, falling on the product of properties which have been recently leased or patented, while it has been abolished on those whose titles are of earlier date. If a revenue was to be yielded by the nickel lands the speakers advised that a mineral tax be applied, but why, they asked, should the nickel mines be burdened with an impost when a bounty was being paid on iron? It is true the royalty has not yet been exacted since the revision of the law making only properties of recent acquirement subject to it, but its presence on the statute book is held to be a menace to capital. It was next urged that the regulations of November to compel the refining in Canada of all nickel taken off lands hereafter granted be rescinded. It discriminates, like the royalty, against lands patented in the future; it hence discourages prospecting and works in favor of concerns, who, like the Canada Copper Company, took out their patents years ago. But the point chiefly insisted on was that the laws and regulations governing the mining industry be stable. The Government should cease frightening capital by changes in the conditions. Letters were read from prominent American mining men asserting that the uncertainty of Ontario mining laws deterred them from coming into the ore fields of the province. R. R. Gamey of Gore Bay advised the Government just to let the nickel industry alone and it would take care of itself. R. R. McConnell recommended that a first class mining engineer be appointed by the Government to study the district and the nickel situation thoroughly and that the Government act on his report, so as to arrive at a policy of some finality. Resolutions were passed in the presence of the minister calling for the abolition of royalties, for the withdrawal of the embargo on the nickel product of the ungranted lands, for the placing of all lands on the same footing, for the opening of all Crown lands to sale or lease, for the placing of the price at $2.50 per acre in the surveyed and $2 in the unsurveyed territory, for the reducing of the development work to $3 per acre, for the establishing and equipping of a mine office in Sudbury under a competent man, for the increasing of the grants to mining and colonization roads, for the adding of a railway as a mineral road from Sudbury to Georgian Bay and for leaving the mining laws alone.

At this meeting there were very many whose interests are bound up with those of the Canadian Copper Company, but there were also present not a few independent people both from Sudbury and other nickel localities in Eastern Algoma.

New Companies.

Francis H. Clergue, Bertrand Clergue, Ernest V. Clergue and H. C. Hamilton of Sault Ste. Marie; E. S. Douglas, W. P. Douglas and F. S. Lewis of Philadelphia, Pa., have been incorporated under the name of the Algoma Commercial Company, Limited, with a capital of $10,000,000. The head office is to be in Sault Ste. Marie, Ont. The purposes for which the company have been incorporated are: 1. To construct railway and public and private works of all kinds, to equip the same and to operate any of them except railways 2. To acquire by legal title mines and mining lands, timber and timber lands and other lands, and to lease, sell or otherwise dispose of the same. 3. To manufacture and sell the products of raw material.

The Nickel Copper Company of Ontario, Limited, are also now incorporated, their capital being $1,000,000. They are to do business as a mining and reduction company. They include John Paterson, John Moodie, Wm. Southam, C. W. Moodie, J. R. Moodie, John Harris, Samuel Baker, W. W. Osborne, J. J. Scott, James Dixon, A. T. Wood, T. H. Macpherson, J. T. Glassco, John Knox, J. H. Tilden, John Milne, G. E. Tuckett, H. B. Witton, J. W. Sutherland, all of Hamilton, and Jacob A. Kammerer of Toronto.

Permission has been granted to the Canada Corundum Company to increase their share capital from $250,000 to $1,500,000.

James Douglas, New York, Benj. A. C. Craig, W. M. Boultbee, Herbert L. Dunn and Donald C. Craig of Toronto have been incorporated as the Port Arthur Iron Company with a capital of $20,000.

John Mann, D. B. Wood. W. D. Schultz, W. F. Cockshutt and J. M. Shuttleworth of Brantford have been incorporated as the Southern Ontario Peat Company with a capital of $100,000.

A group of Cornwall, Ont., men have been incorporated as the St. Lawrence Motor Company with a capital of $25,000.

Application has been made to the Dominion Parliament by the Nickel-Steel Company of Canada for the right to expropriate lands for their buildings, &c.

C. A. C. J.

The Statistical Position of Gold.

A statistical review of the supply and movement of gold since the end of 1896 has been prepared by M. L. Muhleman, Deputy Assistant Treasurer of the United States at New York. It says: "The world's production of gold in the three years 1897, 1898 and 1899 is estimated to have been between $825,000,000 and $850,000,000. The following table shows the location of important stocks of gold at dates named, in millions of dollars:

January 1—	In all European banks of issue.	Entire stock in United States.	United States Treasury reserve.	In United States national banks
1897	1,591	693	137	181
1898	1,749	745	161	207
1899	1,632	949	246	281
1900	1,595	1,016	240	314

The principal banks of Europe showed at dates named holdings as follows, in millions of dollars:

	January 1.			
	1897.	1898.	1899.	1900.
England	171	154	153	146
France	382	394	363	376
Germany	133	149	141	127
Austria	127	153	151	162
Russia	476	614	520	463
Italy	88	80	80	79
Spain	43	47	55	68

In three years Russia shows a loss of $151,000,000, practically all of which went into circulation in redemption of the bank's notes under the law for resumption of specie payments. The South African War not only stopped the usual flow of gold to London, but compelled England to send large amounts to the Cape. We are now prepared to estimate what became of the world's product of, say, $850,000,000. The consumption in arts and manufactures for the world amounts to upward of $60,000,000 annually, so that nearly $200,000,000 were probably so used; India always draws more gold from Europe than she returns, besides keeping her own product; this and the similar movement to other countries in the Orient probably accounts for $150 000,000; the United States took $323,000,000 (keeping their large product and importing about $135,000,000 more than were exported), and Russia's adoption of the gold standard accounts for, say, $151,000,000 disappearing from the usual depositories. These items aggregate $624,000,000 and thus practically account for the enormous sums taken out of the earth since the end of 1896. England's exports to the Cape Colony probably make up the remainder."

At the annual meeting of the New England Foundrymen's Association, held at the Revere House, Boston, on January 10, the following officers were elected for the ensuing year: President, Geo B. Buckingham, Arcade Malleable Iron Company; vice president, H. A. Carpenter, A. Carpenter & Sons Foundry Company; secretary, Fred F. Stockwell, Barbour-Stockwell Company; treasurer, Geo. H. Lincoln, Geo. H. Lincoln & Co. Executive Committee: F. B. Farnsworth, McLagon Foundry Company; T. H. Colvin, Colvin Foundry Company; Wm. Doherty, Doherty Bros.; E. E. Durant, G. F. Warner & Co.; B. M. Shaw, Walker & Pratt Mfg. Company.

Private advices from the West state that large quantities of copper are being sent from the Calumet & Hecla mines overland to Russia. The metal is being shipped by way of San Francisco, Nagasaki and Port Arthur, China. It is to be used in manufacturing naval and military equipment. The urgency of the requirements compensates for the extra expense of overland shipping.

The Armstrong Planer Tool.

The Armstrong Bros. Tool Company, 160 West Washington street, Chicago, have brought out the planer tool, the use of which is herewith illustrated. Fig. 1 is a view of the tool itself, which is made in five sizes. Fig. 2 shows the tool at work in close corners, giving a good general idea of the clearance obtained as well as showing a view of the angles at which the cutter can be set. A job similar to this could be finished with the tool without shifting the position of the work on the bed. Fig. 3 shows the tool cutting a keyway with the cutter reversed and the tool turned around, thus throwing the cutting point behind the center of the tool and practically working as a "goose neck" tool. The shank of this tool is drop forged of steel and case hardened. The cutters are of self hardening steel, rectangular in shape, and of stock sizes. By means of grooved seats, into which they are placed, the cutters may be quickly adjusted to any desirable angle and at the same time so locked in position as to render slipping impossible.

The company consider rectangular shaped steel preferable to square for a planer tool cutter, as it is stiffer and at the same time admits of being ground with more side rake than square steel. The rectangular shape also admits of sharpening oftener than square without reshaping the point. The company state that one of these tools equipped with an assortment of properly ground cutters will effectively equal a complete set of solid forged planer tools.

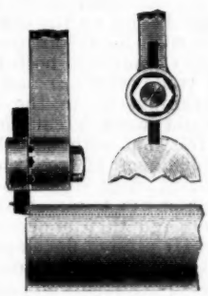


Fig. 3.

Fig. 1.

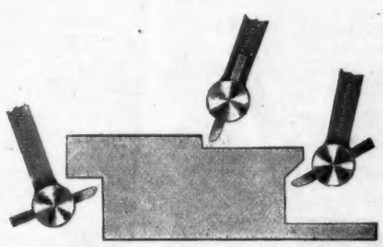


Fig. 2.

THE ARMSTRONG PLANER TOOL.

Pacific Coast News.

SAN FRANCISCO, January 15, 1900.—In agricultural implements large orders were laid in prior to the advance in prices, and as a result there has been in most cases comparatively little advance on what we may term antebellum prices. In this respect conditions have been more favorable to consumers on the Pacific Coast than almost anywhere else, on account of the necessity our jobbing and manufacturing houses are under of laying in and holding large stocks. It would not be reasonable and, of course, it is not expected that the same order of things will prevail. Prices in these articles are bound to go higher, as the cost of raw materials has advanced from 50 to 200 per cent. The manufacture of plows has been quite flourishing during the year, as the manufacturers are enabled to put very superior articles on the market at a comparatively low price. There has, too, been quite a trade in beet tools, which are manufactured here at home of a very superior quality.

There is noted increased building activity throughout the State, especially in the San Joaquin Valley and near Fresno and Bakersfield particularly. This will give an impetus to the demand for building hardware, nails, &c. In merchant iron there has been an advance of from 75 to 100 per cent. and the present base price is $3.60 per 100 pounds.

There was an advance of 40 per cent. in the price of tin plate owing to causes already noted in these columns. This, of course, added to the cost of all articles of tinware manufactured here, to that of the cans used by the canners, &c. There was an advance of about 25 per cent. in all descriptions of plumbers' goods. In stoves it was from 33⅓ to 40 per cent., in sheet iron 40 per cent. and in iron pipe fully 100 per cent. Of this article there was a large quantity imported here by rail and via Panama and a very large quantity exported to the Hawaiian Islands. The latter exports, of course, included riveted pipe manufactured in this city and forming quite a flourishing industry. There is a good outlook for the export trade and we expect it to be much larger for the present year of grace than for any preceding, although in the lines represented by *The Iron Age* we have this year beat the record.

The fine rains that we have had everywhere insure good crops. Even in Southern California, although more rain is wanted yet, the precipitation to date has been much larger than that of last year. Plowing is now being proceeded with in most districts and a very large breadth of land will be put under crop this season—much larger than that of 1899. With only ordinary later rains there will be heavier crops, and instead of talk of 1,000,000 tons of wheat and 450,000 tons of barley, as we had last year, we may look for 1,250,000 tons of wheat and at least 500,000 tons of barley, with a proportionately large tonnage of fruit of all kinds, citrus, deciduous and other products of the soil. This will involve the spending of a good deal of money, even if prices of wheat and barley should not be very high, and will bring about considerably greater prosperity in every branch of the hardware and iron trade. Stocks as carried now are light for Pacific Coast houses, although they are obliged to carry what would be considered in the East very large ones in order to protect their customers. In many lines of business in this city three months' stocks are considered only reasonable ones, and so it is with most of the great jobbing houses all over the coast. By thus laying in these stocks they are enabled to protect their customers against sudden and unexpected fluctuations in the markets.

The tonnage of vessels completed and building at our big shipyard here for 1899 was 46,000 tons and the number of vessels 15. Among those completed were the Japanese man of war "Chitose" and the U. S. S. "Farragut." These are generally reckoned as among the most perfect specimens of naval architecture ever turned out of any shipyard in the world. Among those in course of construction are the U. S. S. "Wisconsin" of 11,525 tons, the U. S. S. "Wyoming" of 2700 tons, the U. S. S. "Ohio" of 12,500 tons, three smaller United States vessels and the great steamship "Californian." The latter is destined for the Australian trade and is not only the largest merchant steamer ever built here, but one of the largest ever turned out at any shipyard in the world until lately. All this shows that although we may be backward in some manufacturing industries we are up to date in this, one of the greatest of all. What we want is a plant where we can turn out the steel plates that go to the making of the ocean monsters. No doubt we shall get there some day, but it requires capital, brains and enterprise—all three united in the same man—to do it.

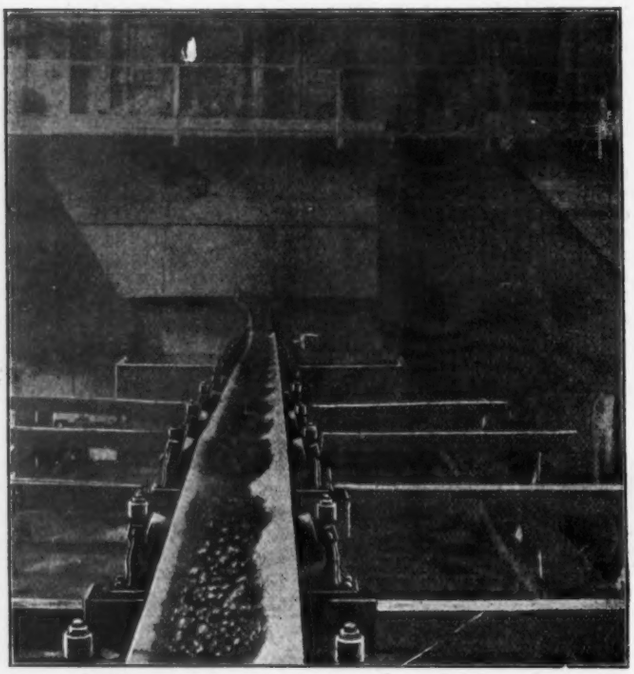
J. O. L.

The La Crosse City Railway Company, La Crosse, Wis., who recently relaid their tracks with heavier rails, sold the old rails at almost the original purchase price. And the purchasers were doubtless glad to get them, if they needed rails for immediate use.

The Department of Public Works of Chicago have submitted to the city council as one of the items to be covered by appropriations for this year an estimate of $3,110,000 to be expended for new bridges and viaducts. Much of this work is absolutely necessary, as a number of the city bridges which have been long in use have been condemned by the city engineer.

The Jeffrey Century Belt Conveyor.

The accompanying illustration shows the Century belt conveyor, as used in the plant of the De La Mar Mercur Mines, of Mercur, Utah. This is one of several conveyors of various dimensions used by this company for handling ore. The conveyor is especially designed for the handling of all abrasive material, which should be carried rather than scraped, to avoid excessive wear. A special grade of rubber belting is used, which has its carrying side reinforced with an extra thickness of rubber of a special composition, which effectually resists the cutting tendency of the material and greatly prolongs the life of the belt; in fact, an ordinary rubber belt would not answer for this class of work at all. The carrying idlers consist of special stands and pulleys, the latter running on self lubricating bearings, which require oiling only at long intervals. The pulleys are set so as to give the belt the shape of a trough, thus concentrating the material in the center of the belt and keeping it from spilling over the sides. These conveyors are



THE JEFFREY CENTURY BELT CONVEYOR.

manufactured by the Jeffrey Mfg. Company, Columbus, Ohio, in all lengths and sizes for various duties.

An Artesian Well at Paris.

The Oil Well Supply Company of Pittsburgh have made an arrangement to drill an artesian well in Paris this year, during the period of the exposition. When the well is finished it will be donated to the city of Paris. L. C. Sands, Jr., will have charge of the work, and about six car loads of material will be sent to Paris early in February. A few weeks later, with a force of about six experienced men, Mr. Sands will go to Paris and begin operations. In order to strike a good flow of water the hole will have to be drilled about 2000 feet deep. It will be located in the Bois de Vincennes, in what is known as the United States triangle, which has been set apart by the commissioners for American machinery exhibits. In Alsace there is at present quite a healthy development for petroleum. The operations are, however, carried on by means of the old pole drilling process, which is much slower, and consequently more expensive, than the American cable system. The United States is naturally advanced in the business, as it takes the lead in volume of oil produced, and the machinery and appliances used to-day are the result of a constant evolution. Deep drilling or boring is now carried on for many other purposes than the production of petroleum, and people in all civilized countries are investigating the hidden mysteries of the earth for both scientific and commercial purposes. In offering this practical exhibit at the Paris Exposition it is the intention of the Oil Well Supply Company to help the good work along, and incidentally secure business for American drilling outfits.

Our Insular Dependencies and the Tariff.

WASHINGTON, D. C., January 23, 1900.—The Sub-Committee on Customs of the House Ways and Means Committee has arrived at a decision of much importance to the general commerce of the country. It has decided that in spite of the general and specific provisions of the Constitution there is no requirement therein compelling the United States to extend its tariff laws to its insular possessions, and therefore that free trade between the United States and Porto Rico, Hawaii and the Philippines is not necessary unless Congress shall hereafter enact laws extending our tariff statutes to the islands.

For several months the representatives of many important trades have been planning to take advantage of the extension to our new possessions of our tariff laws, and at the same time American producers of articles also produced in Porto Rico, Hawaii or the Philippines have become apprehensive lest their interests should be injuriously affected by the establishment of free trade with these islands. In addition an unsettled feeling has prevailed because of the pendency of the seven reciprocity treaties, which on the one hand extend the foreign market for many lines of goods and on the other open the way to foreign competition with American products in the home market. The majority leaders in both Houses of Congress have felt that free trade with our new possessions would not be wholly advantageous to the United States and unquestionably would work great hardship in certain directions. It was felt that with regard to the Philippines especially the establishment of free trade would be a very serious matter, the full effect of which could not be foreseen owing to the extensive territory of the islands, their diversity of products and their enormous latent resources as compared with their present development. It was felt, however, that the Constitution was opposed to the retention of any of these possessions beyond a brief period of military occupation without the extension to them of our tariff and revenue laws and the establishment of mutual free trade. The Sub-Committee on Customs has given much thought to this matter and has finally decided that the view of the Constitution commonly entertained is incorrect, and that that instrument does not require that the tariff laws of the United States should be extended to any of the islands. On this point Representative Dolliver, one of the leading members of the sub committee, said to the correspondent of *The Iron Age:*

"We have looked into the question with much care, and while there can be no doubt that the Constitution prohibits any discrimination in tariff or revenue laws between the States which are recognized as composing the Union we find nothing which seems to require, either because of the text or spirit of the provision, that these remote insular possessions should be regarded as an integral part of the Union so far as tariff and revenue laws are concerned. I think the impression that the tariff laws must be extended to our new possessions arises chiefly from the fact that the territories of the United States, which occupy a different position from that of the United States, enjoy free trade with the States. As it is assumed that these new possessions will come in as territories it is therefore argued that the tariff laws must also extend to them. As a matter of fact the case is vastly different. These islands will not even occupy the position of territories until Congress fixes their status by special legislation, and in the case of the Philippines it might be a long time before their status would be changed from what it is to-day."

The decision of the sub-committee will be reported to the full Committee on Ways and Means at an early date, but whether, if adopted by the committee, it will be reported to the House officially remains to be seen, in view of the fact that it has been urged as an independent proposition and without reference to any pending legislation. It will stand, however, as the judgment of the committee for its guidance in the consideration of any measures that may be referred to it hereafter, and also as the committee's warrant for refraining from initiating legislation looking to the extension of our tariff laws.

Free Trade with Porto Rico.

The new principle laid down in the decision of the sub committee should not be understood as prohibiting the extension of the tariff and revenue laws to our insular possessions, but simply as relieving the United States of the necessity of extending the laws as a matter of constitutional requirement. So far as Porto Rico is concerned the correspondent of *The Iron Age* is advised that the President is preparing officially or unofficially to urge upon both Houses the importance of establishing free trade with the island at the earliest practicable date. It therefore seems probable that within a few months free trade between the United States and Porto Rico will be established, unless the attempted legislation is thwarted

by its opponents. All persons interested will have full warning of the change in our commercial relations, as the matter will be obliged to pass through the usual legislative routine. Bills looking to the extension of our customs laws over the island of Porto Rico have been introduced in the Senate by Senator Foraker and in the House by Chairman Payne of New York, who, however, states that his action is not the result of a committee understanding, but merely represents his individual judgment after personal investigation

Cuba Wants Concessions to be Granted to West India Islands.

Another event of much importance has been foreshadowed by the Ways and Means Committee. A hearing was recently given by the committee to a delegation representing the Havana Board of Trade, appointed for the purpose of conferring with the House and Senate leaders to secure for Cuba the same concessions that have been incorporated in the treaties with the British West India Islands recently referred to in these dispatches. The delegation stated that it was assumed that the United States did not propose to extend its tariff laws to Cuba, as such action could only properly be coupled with annexation, against which this Government stood pledged. The Cuban people, however, greatly desire many important modifications in the tariff laws of the United States and of the schedule for Cuba as established by the War Department. Such modifications could easily be secured by the negotiation of a reciprocity treaty or by Congressional enactment and departmental regulation. It seemed to the delegation only fair that Cuba should have all the advantages it was proposed to grant to the British West Indies, and the Ways and Means Committee was therefore urged to give early attention to the matter.

In reply Chairman Payne assured the delegation that no discrimination would be made in favor of any of the British West India Islands, and especially Jamaica, that would not also be granted to Cuba. It was not possible, he said, to go into details, but the delegation might feel assured that Cuba's commercial welfare would be carefully guarded.

Since the above conference the Ways and Means Committee has given consideration to the subject of the amendment of the tariff laws in the interest of trade with Cuba, and it is probable that within a comparatively short time a plan will be mapped out for legislative and executive action looking to this end. The extent to which the proposed modifications will affect the metal trades remains to be seen, but all interested persons will do well to keep informed of developments along this line. W. L. C.

The R. D. Nuttall Company.

PITTSBURGH, PA., January 24, 1900 (*By Telegraph*).—The R. D. Nuttall Company, manufacturers of gears, Allegheny, Pa., will concentrate their gear manufacturing plants in the old plant of the Westinghouse Electric & Mfg. Company, at Garrison Alley and Duquesne Way, Pittsburgh, which, it is believed, will give this concern the largest gear cutting plant in the United States. Contracts have been awarded for a large amount of new gear cutting and forging machinery, and the new plant will be equipped to cut gears up to 15 feet in diameter. The R. D. Nuttall Company now operate a plant on Grant avenue, Allegheny, and another in the Eagle Power Building, on Sandusky street, Allegheny. Both these plants will be removed to the new location between now and April 1. The company have been doing a very large business for some months in gears and street railway supplies and trolley poles and an increase of their capacity was absolutely necessary. A feature of the new works will be the installation of some large gas engines to be furnished by the Westinghouse Machine Company, and a very complete electrical equipment, consisting of generators, &c., to be furnished by the Westinghouse Electric & Mfg. Company. Two 125 horse-power gas engines will provide the power and generators will furnish current for motors, doing away entirely with overhead belting. Considerable economy in the cost of manufacture will be secured in the new plant, and it is the intention to make it one of the finest of its kind in the world. At present the R. D. Nuttall Company employ about 100 men, but in the new works this number will be more than doubled. They expect to occupy the new plant not later than April 1.

PERSONAL.

Wm. H. Latshaw, first assistant treasurer of the National Tube Company, at Pittsburgh, has been elected a director of that company, to fill the vacancy caused by the recent death of J. J. Vandergrift.

A. M. Crane, hitherto assistant general manager of the American Steel & Wire Company, has been appointed assistant to the chairman of the Executive Committee, J. W. Gates. The position of assistant general manager has been abolished.

J. E. Heimerdinger has been elected a director of the Colorado Fuel & Iron Company, to fill the vacancy caused by the death of C. E. Osgood.

Alfred C. Gary, formerly teller of the Merchants' Loan & Trust Company, Chicago, has accepted the position of treasurer of the Lorain Steel Company, Lorain, Ohio.

A number of engineers and others connected with the operation of South African gold mines have been in Chicago the past week in consultation with manufacturers of mining machinery. Prevented from running their mines by the war, they are investigating the latest improvements in processes and machinery. Among them were Pope Yeatman, general manager, and J. P. Pitchford, consulting engineer, of the Robinson mines and Chief Engineer Messer of the Consolidated mines.

Dr. Alfred Mueller, a member of the National Society of German Engineers, has just established himself at 132 Nassau street, New York, as a patent solicitor. He has a branch office at Berlin.

J. C. Hazard of Catasauqua, Pa., has accepted the position of superintendent of the Empire Steel & Iron Company's furnaces at Shenandoah, Va.

Edwin M. Herr has been appointed general manager and John F. Miller, assistant secretary of the Westinghouse Air Brake Company.

Thomas Ward, former general manager of the Birmingham (Ala.) Rolling Mill, has retired and will locate in Louisville, Ky.

W. J. Devine, manager of the Frankfort Steel & Forging Company of Ellwood City, Pa., is seriously ill at his home there with typhoid pneumonia.

J. R. Phillips, formerly manager of the Ellwood City Tin Mills, has been appointed manager of the Pittsburgh district of the American Tin Plate Company. Mr. Phillips has risen to this position very rapidly.

At a board meeting of the Carnegie Steel Company, Limited, last week, F. T. F. Lovejoy, secretary, resigned his position, and A. M. Moreland, who has been assistant secretary and auditor, was appointed to succeed him. Mr. Lovejoy has been with the Carnegie Steel Company, Limited, for 19 years, 11 of which he held the position of secretary. Mr. Moreland who succeeds him is only 36 years old, but has recently been appointed a member of the Board of Managers of the Carnegie Steel Company, Limited, and H. C. Frick Coke Company.

S. T. Wellman of the Wellman-Seaver Engineering Company of Cleveland was one of the passengers for Europe on Tuesday.

James B. Oliver, president of the Oliver Iron & Steel Company of Pittsburgh, sailed for Europe on Wednesday, January 24, for an extended stay.

W. Stewart Horner of Goff, Horner & Co., Lewis Block, Pittsburgh, has gone to California for a two months' stay.

Geo. G. McMurtry, president of the Apollo Iron & Steel Company, at Pittsburgh, sailed for Europe on Wednesday, January 24, and will be on the other side for several months.

A. S. King, formerly the New York manager for Matthai & Ingram, and who since the incorporation of that firm in the National Enameling & Stamping Company, has been in the New York City office of the last named concern, has been transferred to Baltimore, Md., to take charge of their branch in that city.

Charles H. Miller, formerly at the Star Tin Plate plant, Pittsburgh, Pa., has been appointed superintendent of the finishing department of the United States works of the American Tin Plate Company at Demmler, Pa.

R. K. Edwards of Birmingham, Ala., has been appointed superintendent of the Sloss-Sheffield Steel & Iron Company, at Sheffield, Ala.

A. R. Whitney of the Carnegie Steel Company, Limited, who is now at Colorado Springs, Col., expects, at an early date, to start for the Catalina Islands, on the Southern California coast, where he expects to spend some time.

Foster Milliken of New York has sailed for the Mediterranean.

The Iron Age

New York, Thursday, January 25, 1900.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

The Index of the contents of Volume LXIV of *The Iron Age* for the second half of 1899 is now in print. Subscribers may obtain a copy by addressing the David Williams Company, at 232-238 William street, New York, or by application at the offices of *The Iron Age* at the Forrest Building, Philadelphia, Pa.; the Mason Building, Boston, Mass.; the Hamilton Building, Pittsburgh, Pa.; the Cuyahoga, Cleveland, Ohio; the Pickering Building, Cincinnati, Ohio; the Fisher Building, Chicago, Ill., or the Chemical Building, St. Louis, Mo.

The Iron Age Paris Library.

During the past week we have received nearly 2000 catalogues, price-lists and other documents for incorporation in the Reference Library of Commercial Literature which the publishers of *The Iron Age* will establish at the Paris Exposition. We have received overwhelming evidence of the interest which this enterprise excites in the industries which *The Iron Age* represents. Words of commendation and encouragement have come to us from all quarters. The work of arranging the literature so as to make access to it most convenient has begun vigorously, but the magnitude of the undertaking has exceeded even the estimate originally made, so that we must appeal to those manufacturers to extend to us their co-operation who have not sent their documents, by promptly forwarding them.

The time for shipment is drawing near, and the effective installation at Paris will demand some care. Besides this the work is before us of compiling a book in which all contributors to the Paris Library are to be enumerated, each name being coupled with an appropriate reference to the principal lines of products made by the firm. It is the purpose to widely circulate this work in Europe in order to attract the attention of buyers to the facilities offered to become familiar with the names and commercial literature of American manufacturers in the iron, steel, hardware, machinery and metal trades. We welcome further contributions to the Library, but must plead for that promptness upon which much of the success of the enterprise must depend.

Where Co-operation is Needed.

An encouraging fact in connection with the growth of American exports of late is that it has not been attained at the expense of other industrial nations. Otherwise there might come a turning of the tables whereby some share of the foreign trade which we now enjoy would pass to our competitors. It will aid in understanding the situation to consider that the industrial growth of the United States had its development first in supplying the home market, which has grown constantly at a greater rate than the population, through an improvement in standards of living and the increasing consumption of articles which, once introduced as luxuries for the few, speedily have become necessities for the many. If, at any time, the establishment here of industries new to America has checked the importation of certain kinds of goods, the foreign producers as a rule have been able to find compensating markets through the advancement of civilization in new quarters. In any event, the growth of American manufactures for home consumption has not reduced the total of production elsewhere. Nor need there be any falling off in foreign industries because of our having outgrown the home markets and become an exporter of manufactures on a large scale. There is hope for the whole industrial world in the universal broadening of human wants, even in what were until recently "unknown countries," similar to what has been experienced in the United States, though perhaps not in every country on so important a scale.

And yet a full share in all this prospective world development cannot be expected to fall to the United States as a matter of course. It is possible for one country to surpass another in the pursuit of trade in a third, just as one merchant may prosper more than a rival in the local trade of a village. Certainly neither the United States nor Great Britain nor Germany can hope to figure in the trade in near prospect in South Africa, for example, to such an extent without making an effort as might be possible by actively seeking a market there. The American people happen to have been in a position from the beginning of their independence to enjoy a certain amount of export trade in the absence of special exertions to that end. Our surplus agricultural products practically have been sought for, instead of finding foreign markets through any act of our own. The difference between ourselves and the Chinese in this respect is that we have welcomed buyers from abroad, whereas the foreigners who first undertook to open the ports of China to commerce had to fight for the privilege. More recently manufactures have become an important element in our exports, but in not a few lines this has been due to demands growing out of foreign needs, rather than because of American enterprise in seeking markets, although, of course, the American export trade has developed very many instances of successful initiative sufficient to prove the capacity of our people for this line of business whenever they devote themselves to it seriously.

In time the markets which have taken certain of our products from necessity, rather than from choice, doubtless will be supplied with more or less grain from Russia, meats from Australia, cotton from Egypt, and so on. Nor will the United States, appearing suddenly and unexpectedly as an exporter of iron and steel and machinery, escape the severest competition on the part of those countries which hitherto have supplied the wants of the world, outside of America, in these lines. It is important, therefore, not only to gain a share of any new markets that may be developed, but also to protect such of the trade already in existence as may have resulted from fortunate chance, whether in raw materials or finished products. And in this connection the methods which have resulted successfully in the case of competing nations at least are worthy of our notice.

There is needed, for one thing, some basis for or system of co-operation of exporting interests. A single firm may appear very important when viewed from the standpoint of the home market, and yet become inconsequential when it endeavors to make the world its field. Many such firms, each working single handed, may fail to make much of an impress in a foreign market, while if they worked together their aggregate interests might command more respect and, in the end, result in more business. Co-operation in business is not unusual here

at home. Boards of trade, chambers of commerce and manufacturers' associations are but examples of co-operation. When business men treat with railway companies for lower rates, or when they petition Congress for desired legislation, or when those engaged in a certain trade organize a bank in the interests of that trade—all of this is co-operation, having for its aim the promotion of interests which they have in common, while each firm remains free in the conduct of the details of its business. Such industrial exhibitions as are now in prospect or have been held lately in this country are examples of co-operation of a very practical kind. The bicycle and automobile shows are specimens of co-operation.

All these forms of working in concert, so familiar in the home trade, might be applied in respect to foreign markets, with the possibility of equally good results. They would place before each separate concern participating the combined experience of all of them in matters relating to forming foreign connections and the peculiar business requirements in each foreign country abroad, and make it unnecessary for every one who wished to engage in the export trade to learn at his own expense what had been learned before by hundreds and thousands of others. Only this month the leading merchants of an important Southern city traveled together several hundred miles over a new railway route and returned enthusiastic over the benefits derived from seeing the new country and studying its trade conditions in person. There doubtless is more than one branch of industry in America the leading men of which could profit largely from organizing excursions to countries abroad in which they might wish to open trade. This practically is what is being done in some countries with regard to trade in Russia, and it need not be surprising if, as a result, they should secure a particularly important footing in the realm of the Czar. It was done some years ago by American manufacturers, who visited Mexico in a body.

There are many American products which no doubt are suited for foreign sale, or could be made so, in respect to which the disadvantage now exists that they are made by each of a great number of manufacturers on a small scale, or that the profit which can be charged on each is too small to justify the expense of creating a demand for them abroad in the ordinary way. American agricultural machinery already is in good demand in Europe, but such articles as mowers and reapers afford each a margin of profit which enables the manufacturers to send out well paid selling agents to make a market for them. Besides, these machines were first made in America, and the fact of their novelty and that they supplied wants which could not be supplied immediately from other countries has helped the sale of the American products, just as has been the case with sewing machines, typewriters, cash registers, and the like. But the great mass of the more ordinary metal articles have always been made abroad, and the class of goods in use has sufficed to meet the wants of the people using them. Such goods as we may export in these lines have not enough novelty to compel attention to them; or, if they do differ from the articles already in use, this very difference may, at first sight, serve to excite prejudice. At any rate, the small profit on each, and the fact that the distribution must be much wider in proportion to the volume of business done than in the case of larger articles of manufacture, has been a bar to their sale, even supposing that people abroad generally were disposed to adopt them readily. It is in connection with these smaller manufactures—so important in the aggregate—that co-operation is particularly essential, for many items can hardly be placed advantageously in outside markets in any other way.

The Change in the Money Market.

Six weeks ago there was a panic in New York because the supply of money was insufficient, or because it was feared it was about to become such. Every European monetary center was in a state of apprehension, and the banks in European capitals were marking up their discount rates. The money market here is now quiet and easy, and last week three European public banks reduced their discount rates, and there is a possibility of another reduction by the Bank of England, and London financial correspondents write of the "glut of free credits." What has happened?

The South African war itself has much less effect upon business than was believed when the tightness of the European money markets was attributed to the interruption of Transvaal gold production. But what people may think from time to time about the South African war has undoubted effect upon the market and the state of trade. The war still goes on; the prospect of its prolongation increases; the suspension of Transvaal gold production seems likely now to last longer than was expected two months ago, and yet money is easy in Europe and the banks are reducing their rates of discount.

The main thing that has happened abroad is that the state of alarm caused by war is passing away. War does not destroy gold, and the production now without the Transvaal is as great as it was two years ago with the Transvaal, so that there can be no very serious shortage, but wars and other uncertain conditions create apprehension and a great many holders of property of variable and conjectural value desire to get gold instead. After some of them have done this and others have found it less imperative than they had expected, the state of alarm and the efforts to secure gold abate and matters become more normal.

What has happened in this country is a little more material and a little less psychological. In spite of the export of considerable gold from here, the large disbursements by the Treasury for bonds, interest and pensions, the deposit of funds in banks, and the return of funds which went West and South early in the fall to purchase the crops, have made the supply of money much more abundant. The gold which was sent to London relieved the tension there, and that market and New York are so intimately connected that the event verified the prediction that the gold would do more to ease the New York money market when in London than it would if it were here.

One important event on both sides of the ocean, and one not altogether to be regretted, is that speculation has very much abated. With plenty of money at low rates speculation is inevitable. But prices cannot continue rising indefinitely. At the first signs that the limit has been reached there is a rush to sell, prices tumble, and there is a panic, or something very near it. This is unfortunate, and sometimes disastrous; it too often involves legitimate business, as well as speculators. But it seems to be an inevitable result of the purchase of securities with borrowed money solely in the hope of selling again at a higher figure. If war or the closing of the African gold mines does not stop the advance, the exhaustion of the loanable funds will. The high rates for money here and abroad checked speculation, and with that the supply of money became equal to the needs

of general business, and the effect of the stoppage of the African gold mines was found to have been exaggerated. London is also beginning to feel the second effect of war upon the market; the first is the withdrawal by the Government of money to meet the costs of war; the second is the disbursement of those same funds, and the speedy return of most of them to the usual financial markets.

Stability of Railroad Rates.

The *Railway Age* speaks approvingly of traffic conditions in Great Britain, as set forth by a correspondent of that paper. Among the British railroads, it appears, "rate wars exist only in memory. The last one, between the great trunk lines, took place in 1858—41 years ago. Competition is active, but instead of meaning sacrifice of revenue, it takes the form of improved service, better carriages, faster trains, attractive advertising and other methods of inducing patronage. The competitors never cut rates. Agreements once made are religiously observed by British managers. Tariffs are unchanged for years. Differentials are unknown. Fares are based on short line distances, as with us, but circuitous routes to not claim a share of the business and smash rates in order to get it. As a result of treating each other fairly and keeping agreements, British railways pay dividends regularly and receiverships and foreclosures are unknown." It is further stated that "pooling is sanctioned by law, ticket scalping is not tolerated, attempts to 'beat' the roads are punished, fraudulent practices by shippers, such as false billing, overloading, underweighing, &c., are treated as criminal. The railways are expected and desired to pay dividends, and are allowed to charge sufficient rates—much higher than in this country." The inference is drawn by our contemporary that "if railways were protected here as they are in England and treated as great public benefactors and not as the common enemy, the same condition of equitable and stable rates, with mutual peace and good will, would prevail here as there."

This seems to be a common sense view worthy of general indorsement. It is conceded that nowhere in the world are railroad rates, either for freight or passengers, so low for equal service as in the United States. They have been reduced largely by excessive, and in many instances senseless, competition between the companies for business, the loss of which would not have injured the line that received no part of it, especially if full rates had been maintained on other traffic. When cuts are made it seldom happens that rates are afterward fully restored. Thus by cut after cut, and rate wars of such frequent occurrence that one of some kind seems to be always on hand, have United States traffic charges been reduced to a point which threatened general bankruptcy. The revival of trade probably saved many a railroad system tottering on the verge. Local charges may have been too high in some instances even then, but most of the railroad business being subject to competition between rival lines, the earnings were too light to cover all expenses. Adverse legislation probably injured railroad properties in some States, but the injury thus done was much less than that self inflicted by pugnacious railroad managers.

A movement is now under way to advance freight rates quite generally and to maintain them as well. The advance, if not too great, is justified both by higher costs of materials used by railroad companies and by the prosperous condition of the country. General conditions are such that railroad companies should certainly be able to demand better rates than when all interests were starving and the transportation companies starved with them. Then when the high tide of traffic subsides and railroad revenues fall off their earnings will not only pay expenses, but leave something for their stockholders, and perhaps permit better wages for their employees. It is asserted that strong financial interests, whose powers are ofttimes better directed and therefore have greater effect than legal enactments, are now bringing pressure on railroad managers to compel them to maintain rates. If this can be done a most important work will be accomplished for the general benefit of the country. Here and there a shipper may find himself deprived of some special advantage, if rate cutting is abolished, but the country as a whole will fare better if its railroad interests are reasonably prosperous. It has gone through a long period of railroad bankruptcies and the experience was neither pleasant nor profitable.

The Passing of the Link and Pin.

A branch of industry which will ere long become extinct is the manufacture of links and pins for coupling railroad cars. Automatic coupling devices render unnecessary the use of these ancient contrivances for fastening cars together. The adoption of automatic couplers has been hastened by national legislation, even though the time has been considerably extended before the penalties are imposed and years have passed since the Congressional enactment first went into effect without the punishment of any railroad official for tardiness in making the improvement. So much progress has been shown in changing the equipment of cars that the day is undoubtedly near at hand when links and pins will only be seen in collections of railroad curios. Railroad supply houses which once handled them in carload lots, and kept large stocks to meet the steady demand, now find their orders calling for a few at a time, while such orders are likely to be far apart. The passing of the link and pin is simply another illustration of the march of progress. Apart from the danger to railroad operatives, the old-fashioned method of coupling cars is objectionable as applied to modern rolling stock and would probably have been supplanted in due course by the automatic coupler even without a compulsory law. In this instance the loss of trade by the forge is the gain by the malleable and steel casting foundries. They have enjoyed a heavy business, not only in equipping old cars, but in furnishing couplers for the myriads of new cars purchased or built by railroad companies since the revival of prosperity.

The Chicago Drainage Canal.

The waters of Lake Michigan are now flowing unrestrained through the Chicago Drainage Canal on their way to the Mississippi River. All the preliminary work having been completed to the satisfaction of the commissioners appointed under the act of the Illinois Legislature to see that its provisions had been carried out, and the canal excavation having been filled by the gradual admission of water since the 2d inst., the Governor of the State authorized the canal to be duly opened on the morning of the 17th inst. No time was lost in opening the controlling works at Lockport, the southern end of the excavation, and the great work was pronounced completed and in full operation as far as the efforts of engineers could accomplish it. The formal opening of the canal was made hastily and without set ceremonies, as an injunction was momentarily expected from the Federal courts at the instigation of the city of St. Louis and the State of Missouri. The people of that municipality and State fear the pollution of the Mississippi

River. The possibility exists that their contention may win and that Chicago may be restrained from disposing of its sewage in this way. In that event the enormous outlay involved in the construction of the canal will have been expended for naught, and Chicago will have a most serious drainage problem still to be solved. It would seem, however, that if no other consideration or legal question gives Chicago the victory in the settlement of this question, the city of St. Louis and the State of Missouri have through their negligence in permitting the work to be completed at such enormous cost lost their opportunity to interfere with the undertaking. The intention thus to dispose of the sewage of Chicago was fully disclosed before the first spadeful of earth was turned for the excavation in 1892.

Automobiles at the New York Cycle Show.

The exhibits of automobiles at the cycle show, Madison Square Garden, New York, cannot be considered as being representative of the industry. While the range of vehicles exhibited is large only a small group of the manufacturers is represented. The types shown vary from the small runabout to the heavy truck, the power being oil or gasoline and electricity.

The Waverley Electric Motor Vehicles.

In the vehicles made by the Indiana Bicycle Company of Indianapolis, Ind., the framework of the running gear is cold drawn seamless tubing. All the wheels have ball bearings and Royal single tube tires, those for the lighter types of carriages being wire spoked and those for the heavier having wood spokes.

The motor is of the multipolar type, designed for its special purpose, with due regard for overloads and having a reserve capacity sufficiently large to insure it against accidents. It is rigidly hung to the running gear and it and all gears are carefully covered, amply protecting them from dust and water, so that in cleaning the carriage only moderate care need be exercised. On all but the largest vehicles, which have a double reduction gearing, the motor shaft is geared directly to the two rear wheels, propelling the vehicle by a single reduction. Each rear wheel is made to revolve independently of the other by compensating gears placed in line with the motor shaft. The motors are made in a variety of sizes, according to the weight of the vehicles.

The battery consists of 44 polarization cells, varying in size according to the power desired, the weight of the lightest being about 12 pounds for each cell. A starting lever, regulating the speed, &c., is placed at the extreme left side of the seat. By pressing a button in the top of the starting lever the carriage is reversed. Each vehicle has five speeds forward and three backward, varying from a minimum of 3 miles per hour to a maximum of 10 to 14 miles, according to the weight and type of vehicle.

The steering, except on the larger types of vehicles, which have a steering wheel, is accomplished by a lever conveniently placed, and is a very natural movement requiring practically no exertion and needing no particular explanation. The radius of turning is done with a very small amplitude of lever movement and the wagons can be turned completely in a space twice their own length. A band brake is applied to the periphery of the compensating gear drum, and is operated by a pressure of the foot upon a stem projecting through the floor of the vehicle. This brake is very powerful and will stop a vehicle in about twice its own length at full speed or reduce its speed gently if applied gradually. A safety locking switch is conveniently located, which renders the vehicle inoperative, so that it can be safely left alone anywhere without danger.

The American Electric Vehicle.

One charging of the batteries of the vehicles built by the American Electric Vehicle Company will answer for a run of from 35 to 50 miles, the cost being about 1 cent a mile. The batteries can be recharged in the carriage in about three hours' time, shutting off automatically when filled. There is provided a combination meter by means of which the operator estimates the mileage capacity yet remaining in storage. The motors are single reduction, with hollow armature shaft. They are dust and water proof. The maximum speeds of the vehicles vary according to their purpose and can in each case be regulated to meet the demands of the road—2 to 12 or 15 miles an hour.

The Hertel Motor Carriage.

The carriage built by the Oakman Motor Vehicle Company of Greenfield, Mass., uses a hydrocarbon as fuel. An electric generator driven by the motor provides the current for ignition. One lever controls every operation except steering and gear changing. The charge is sufficient for a run of 75 miles, the speed being any desired up to 20 miles per hour. Ordinary gasoline is the fuel used. The motor is odorless and practically noiseless.

The Foster Automobiles.

The automobile made by Foster & Co. of Rochester, N. Y., employs a hydrocarbon. The boiler is so designed that there is always sufficient water to obviate all danger of burning while doing heavy work, and when doing little or no work, as in the case of down grades, water cannot be forced into the boiler above a certain level. The fire is under perfect control, so that it can be increased or decreased as may be required. The steering device is so arranged that it will keep the wagon under control and prevent it from wabbling, a dangerous feature when running at high speed.

The Riker Automobiles.

Several patterns of automobiles are exhibited by the Riker Electric Vehicle Company of Elizabethport, N. J. These are all electrically driven, the motors varying from ¾ to 3 kw., from the runabout to the delivery wagon. The runabout weighs 1300 pounds and will carry one passenger in addition to the operator. It has three speeds ahead and two to the rear, the maximum being 10 miles per hour. It has a mileage of 25 on the level on each charge of the battery. The delivery wagons are driven by two motors of 2 kw. each, the maximum speed being 9 miles per hour. One charge carries the wagon from 20 to 30 miles on the level. The weight is 3600 pounds and the carrying capacity 1000 pounds in addition to the operator and delivery man.

The Loomis Automobile.

In the automobile manufactured by the Loomis Automobile Company of Westfield, Mass., there is no machinery whatever in the body. All of the mechanism is contained in a little box hung on the rear of the truck under the body. The motor in the No. 1 model is geared to run from 1 to 15 miles per hour and is of 2½ horsepower. There is a powerful compound brake capable of sliding the wheels instantly, if necessary, by pressing the brake button with the foot. No carbureter is used, consequently there is no gas generated ahead, so there is no danger even though a lighted match be held anywhere about the apparatus. No water is used and the vehicle can be left out doors in the winter without danger of freezing. All the running parts are mounted on ball bearings which are dust proof. The vehicle weighs but 815 pounds.

Information Wanted.— Who makes the Halbe gas valve?

Who produces machinery for preparing flax?

An inquiry is at hand for the address of manufacturers of iron trucks as used in enameling ovens.

Rumors have been prevalent lately of a big combination in the Tin Can manufacturing industry under the auspices of ex-Judge Moore, of Chicago. No verification of the report, however, is obtainable from responsible sources, and by many in the trade the success of any enterprise of the kind is held to be more than doubtful. Efforts to combine the Tin Can manufacturers have been made from time to time without result. The nearest approach to anything of the sort in the trade is an agreement as to prices, &c., which exists between certain of the larger Baltimore Can making concerns, namely, the Norton Tin Plate & Can Company, R. Tyne Smith & Co., the A. Booth Packing Company, and Black & Krebs, who are known as the "Big Four." The agreement is local, however, and confined to the above-named concerns. It is claimed in some quarters that the only practicable method of organizing a consolidation of the Tin Can industry is by making it an adjunct of the American Tin Plate Company, who control the raw material.

The Pennsylvania Railroad will build across the Allegheny River, connecting Pittsburgh and Allegheny, in connection with the new Union Station to be built in Pittsburgh, one of the finest steel bridges ever constructed. The new structure will take the place of that which now contains the tracks of the Fort Wayne Railroad. The present structure will be used for traffic until the new bridge is completed.

Some idea of the enormous attendance that is looked for at the forthcoming Paris Exposition may be gathered from the fact that the printing of 65,000,000 admission tickets has been contracted for by the exposition management.

MANUFACTURING.

Iron and Steel.

The Riverside Iron Works of Wheeling, W. Va., have passed into the complete control of the National Tube Company. The Riverside Iron Company immediately after the legal transfer of the plant were dissolved by their stockholders. This plant, which was one of the largest taken over by the National Tube Company, will hereafter be operated under the name of National Tube Company, Riverside Department, John D. Culbertson, manager.

The report that Jones & Laughlins, Limited, of Pittsburgh, would build a new Bessemer plant is untrue. It is a fact that the concern have been buying some additional property adjoining their works on the South Side, but have not as yet determined what they will put on the property. However, they have no intention of building a new steel works.

The plant at Harvey, Ill., built by John M. Sweeny and recently operated by the Chicago Mining Machine Company, has been sold to the American Bicycle Company. The new owners are reported to contemplate using it for a rolling mill to manufacture cold rolled steel sheets and strips for use in their factories.

The report that the tin plate plant at Cumberland, Md., would be started up at an early date is untrue. This plant was formerly owned by the Cumberland Steel & Tin Plate Company, but was taken over by the American Tin Plate Company, and this concern have not as yet decided what they will do with it. It is a fact, however, that the new sheet mill under erection by the Cumberland Steel & Tin Plate Company is nearly completed, and will be ready for operation in a few weeks.

The Sharon Steel Company, Sharon, Pa., advise us that the report that they would add a tin mill to their new plant is untrue.

It is reported that a new tin plate plant is to be erected at Washington, Pa. W. H. Griffiths of the Tyler Charcoal Iron Tin Mills at Washington, Pa., is mentioned as being connected with the proposed new plant.

The annual meeting of the stockholders of the Brier Hill Iron & Coal Company, operating Brier Hill furnaces at Youngstown, Ohio, was held last week and the following directors were elected: George Tod, Henry Tod, William Tod, J. G. Butler, Jr., H. H. Stambaugh. The directors elected George Tod, president; Henry Tod, vice-president; H. H. Stambaugh, secretary and treasurer; J. G. Butler, Jr., general manager.

At Pittsburgh Lawrence Dilworth, Samuel Owens and F. C. Stolzing, liquidating trustees for Dilworth, Porter & Co., Limited, manufacturers of railroad spikes, passed deeds by which the property of the company lying between Fourth and Bingham streets, South Side, and the Monongahela River, improved with mills and other buildings, valued at $800,000, is transferred to Louisa M., Lawrence, Virginia C., Charles R., Joseph R., Julia and Anna W. Dilworth, Carter C., Elizabeth D., H. C. and Louisa Beggs and Elizabeth Owens. The transfer was made necessary by the application for a renewal of the company charter.

The Pressed Steel Car Company are arranging to greatly enlarge their plant at Joliet, Ill., as soon as the Illinois Steel Company can guarantee the necessary supply of plates. A Joliet paper states that the company desire to turn out 15 finished cars a day at that plant.

The stockholders of the Franklin Steel Casting Company, Franklin, Pa., have re-elected their old board of directors, and the company's officers have also been re-elected. Plans are being completed for doubling the capacity of the company's plant.

The Ferro-Titanium Company of New York City have been incorporated with a capital of $100,000 to manufacture iron and steel. The directors named are: Charles S. Maurice of Athens, Pa., and Edward Hayes of Buffalo and James MacNaughton of New York.

The American Tin Plate Mill at Ellwood City, Pa., which was scheduled to start January 15, did not start then owing to a change in the company's plan. Officials of this mill now claim that operations will be resumed before the last of January.

The Standard Seamless Tube Works, at Ellwood City, Pa., started last week with a large force of men. The tube business is now revived there with greater enthusiasm than ever.

The rod mill at the Beaver Falls works of the American Steel & Wire Company, at Beaver Falls, Pa., has been started up, the men who went out on strike having returned to work.

The Lockport Iron & Steel Company of Pittsburgh, Pa., are now running their forge on heavy forgings.

A considerable time ago the National Steel Company placed an order for an additional blowing engine for the converting department of the Bessemer steel plant of the Youngstown Works, at Youngstown, Ohio, the erection of which is just about completed. This will give additional capacity in the converting department, and with the use of hot metal the National Steel Company expect to be able to make 2200 tons of steel per day. This will furnish a larger supply for the blooming mill and give an additional output, because the mill has always been able to roll more steel than the converting department could supply.

The statement that the Canal Dover plant of the American Tin Plate Company, at Canal Dover, Ohio, had been closed down for an indefinite period is untrue.

Machinery.

The U. Baird Machinery Company of Pittsburgh have received a contract for nearly all the machine equipment for the new open hearth steel plant to be built by the Sharon Steel Company, at Sharon, Pa. The contract includes a very large number of lathes, planers and other iron working tools. It is one of the largest contracts for machinery placed in the Pittsburgh market for some years.

The Climax Mfg. Company, Corry, Pa., builders of Climax tramway locomotives and logging cars, recently shipped a locomotive to Australia. The concern also recently forwarded to New York for shipment by steamer a tramway outfit consisting of a 17-ton locomotive and six logging cars, and have just completed another to go to Honolulu, which will be shipped in a few days. The locomotive sent to Australia is one of their special geared type, made for service on light tramway where heavy traction is desired. This type of locomotive is a special product of this concern. They advise us that they are doing a very good business, and are several months behind in their orders.

The American Steam Gauge Company, now located on Chardon street, Boston, will remove to Boylston street, Jamaica Plain District, about February 1, where they will occupy a building 145 x 45 feet, four stories high, with two 80-foot wings, one story high. In their new location they will have double their present capacity, having already ordered new machinery which will be installed with more yet to be purchased, and it is the intention of J. L. Weeks, general manager, to have a thoroughly up to date plant for the production of their well-known steam specialties

Advices from Milwaukee, Wis., state that the Chicago, Milwaukee & St. Paul Railroad Company are maturing plans to rebuild their shops at Dubuque, which were recently destroyed by fire. The company contemplate expending $100,000 for this purpose. The new structures will be modern in every respect, and as the greater portion of the machinery at the shops was irreparably damaged by fire, it will be replaced by the most improved on the market.

The St. Louis Iron Works, St. Louis, Mich., are arranging to remove their plant for the manufacture of gasoline engines to Albion, Mich., where they have secured buildings already erected.

A machine shop to cost $20,000 is to be built at Bakersfield, Cal., by C. A. Canfield, to manufacture well boring tools. It will include a 45-foot lathe to turn out the steel stems used.

The Boyer Machine Company of St. Louis, makers of pneumatic tools, for whom the Chicago Pneumatic Tool Company are selling agents, have definitely decided to remove their equipment to Detroit. Louis Mullgardt, architect, St. Louis, is preparing plans for factory buildings to be erected on a lot 185 x 346 feet, at corner Second avenue and Amsterdam street, Detroit. The main building will be one story in hight, and present solid fronts on both streets. Windows in abundance are to be provided and roof construction will be saw tooth, admitting northern light only. It is the intention to give the 346 feet leg a width of 90 feet and the 185 feet leg of L a width of 45 feet. Necessary outbuildings will also be provided to be connected by passageways only with the main building.

The Silver Brothers Iron Works Company, Salt Lake City, Utah, are making extensive improvements, comprising a large boiler shop and an addition to the foundry. W. J. Silver, father of the brothers Silver, was the pioneer foundryman of Utah.

Samuel Trethewey & Co., Limited, Pittsburgh, manufacturers of solid steel shear knives, punches and shears and special machinery, are operating their plant to full capacity, and have a very large amount of work on hand. This concern are contemplating some additions to their equipment which will materially increase their capacity.

The Universal Filing Tool Company have been organized at Anderson, Ind., for the purpose of manufacturing electrical machinery. The capital stock is $10,000, and the stockholders are Edward S. Lea of Elwood, J. A. Van Osdol, H. C. and T. N. Stilwell, Chester Browne, Frank Makepeace and J. E. Johnson, the latter of Muncie. The plant will be started in a small way, but eventually it is hoped it will employ quite a large force of men. At the outset an electrical filing tool, invented by Mr. Lea, will be manufactured. It is claimed that this tool will revolutionize grinding in machine shops.

The Muncie Foundry & Machine Company, Muncie, Ind., are manufacturing a machine of their own design for blowing glass fruit jars by compressed air. It is claimed that the machine will greatly cheapen the cost of manufacturing such jars.

Pneumatic tools and compressed air appliances are so generally recognized as among the best labor saving inventions of to-day that their use has extended to all branches of manufacture. The great flexibility of air as a motive power

and the ease with which it can be applied to all work, especially in otherwise inaccessible positions, and the facility with which this power is d'stributed to any desired point, have given it a commanding place among the best labor saving inventions. The Chicago Pneumatic Tool Company report a large increase of their sales with the opening of 1900, their tools going to all parts of the world and into all varieties of uses. They are now receiving returns from a general letter to all their customers and the responses show that their tools and appliances have met with favor. As new demands arise new tools are produced to meet such demands. Among their later tools the Boyer long stroke riveting hammers are found to meet the requirements on all classes of riveting, particularly on boiler work, where the best results are attained with a great saving in labor and expense.

At the annual meeting of the stockholders of the United States Projectile Company, held on the 17th inst., the following were re-elected trustees to serve for the ensuing year: E. W. Bliss, Daniel F. Lewis, James C. Bergen, Edwin Packard, James W. Lane, Alexander Milne, and Arthur T. Porter. At the annual meeting of the Board of Trustees the following officers were elected to serve for one year: E. W. Bliss, president; Arthur T. Porter, vice-president; James W. Lane, treasurer; Charles E. Porter, secretary and assistant treasurer. Arthur T. Porter was appointed general manager.

The St. Clair Foundry, Belleville, Ill., report an excellent trade for the year just closed, and also as compared with business for 1898, which in itself was very good. They are making improvements in their foundry and will install a Green rotary pressury blower No. 5 A, a 20 horse-power Born, Belleville, upright engine, and a new 60-inch cupola.

The Weimer Machine Works Company of Lebanon, Pa., are at present erecting at the furnace plant of the Spearman Iron Company, Sharpsville, Pa., one of their 50 x 96 x60 inch blowing engines. They will next week make shipment of an engine of the same size to the Salem Iron Company, Leetonia, Ohio. This company have also orders for the same size engine from the Paxton Iron & Steel Company of Harrisburg, Pa., and a second order from the Stewart Iron Company, Limited, of Sharon, Pa. The Globe Iron Company of Jackson, Ohio, and the Shelby Iron Company of Shelby, Ala., have ordered each an engine with 42-inch steam cylinder, 84-inch air cylinder, 60-inch stroke of Weimer's latest design. The Pennsylvania Furnace Company of Sheridan, Pa., have ordered engines of the above firm. These engines are to be extra heavy in design and will be of the steeple type cross compound condensing. The high pressure steam cylinders will be 42 inches in diameter by 60 inches stroke, the low pressure steam cylinders will be 82 inches in diameter, the air cylinders 84 inches in diameter, the stroke of engines will be 60 inches. Eeach pair of engines will weigh over 700,000 pounds.

W. L. Lindsley, 37 Fidelity Building, Pittsburgh, representing Pawling & Harnischfeger, cranes, at Milwaukee, has secured an order for a 10-ton electric crane for the Goulds Mfg. Company, Seneca Falls, N. Y.

Henry James Kimman, mechanical engineer of the Standard Pneumatic Tool Company, of Chicago, Ill., after an absence of three months, has just returned from an extensixe European tour. While in England he established works at Chippenham, near London, for the manufacture of Little Giant pneumatic tools for the European trade, and installed therein $50,000 worth of the most improved machinery and labor-saving appliances, and before his departure for this country the plant was in full operation and turning out tools in large numbers. Mr. Kimman states that the opposition to the use of pneumatic tools by labor organizations on the other side of the Atlantic on account of their labor saving qualities is gradually dying out, and everywhere progressive concerns are installing machines of this description. The export business of the Standard Pneumatic Tool Company has increased with remarkable rapidity during the past year, and the Little Giant pneumatic drills, hammers, and boring machines are being adopted by some of the largest foundries, ship yards, machine shops, railroad and boiler works and manufactories in Great Britain, France, Germany, Italy, Sweden and Russia. An order was recently received for $25,000 worth of pneumatic tools from a machinery dealer in Holland, and other orders aggregating this amount from the other countries herein enumerated. The domestic business is also increasing, particularly with the railroads, and if the demand for the Little Giant tools continues the Standard Pneumatic Tool Company will again be compelled to enlarge their works.

The foundry of the Ajax Iron Works, at Corry, Pa., manufacturers of mill supplies, shafting, pulleys and hangers, was damaged by fire on the night of January 17. The damage was confined mostly to the roof and pattern storage room, and the loss, amounting to about $7,000, is covered by insurance. The concern do not expect to be delayed to any extent in their output, as their machine shop is intact, and they hope to have their foundry in running order again in two weeks.

The United States Government recently placed a very large order for machine tools for the re-equipment of the Navy Yard at Brooklyn, N. Y., that was recently destroyed by fire, with the American Tools Works Company, Cincinnati, Ohio. It is stated that the order will be duplicated shortly.

Hardware.

The plant of the Racine Nail & Tack Company, Racine, Wis., was destroyed by fire on the 19th inst. The loss is $50,000, with $22,000 insurance. The company have been manufacturing tacks and trunk, shoe and basket nails.

The Harris Wire Fence Company have been organized at Oxford, Mich., with Dr. Henri G. Ide, president; Willis D. Miller, vice-president; Sanford R. O'Brien, treasurer; Wm. D. Hollister, secretary. The capital stock is $30,000, fully paid in.

The Morris Keyless Lock Company have been organized at Fremont, Neb., with an authorized capital of $40,000 and a paid up capital of $8000, to manufacture post office boxes and outfits with combination self locks. All the work will be done in Fremont. The officers of the company are: J. E. Bienkiron, president; J. H. Morris, vice-president; John Graham, secretary and treasurer. The new lock is the invention of J. H. Morris.

E. T. Lippert, proprietor of the Penn Saw Works, Millvale, Pa., and Pittsburgh Saw Works, Pittsburgh, Pa., and manufacturer of all kinds of saws and general mill supplies, states that he had booked enough orders to keep both plants running to full capacity for at least four to six months. Orders are coming in very freely, and all indications point, Mr. Lippert states, to a very prosperous year.

Among recently licensed corporations in Illinois are the following: Finley Lawn Rake Company, Joliet, capital $10,000, for manufacturing and dealing in machinery; incorporators, John O. Barrett, Truman A. Mason and Chas. E. Finley. Economy Implement Company, Monmouth, capital $5000, for manufacturing vehicles, agricultural implements and tools; incorporators, Chauncey Sherrick, Walter S. Hartley and J. Ross Carpenter.

The Kruse Kross Klevis Company, Higginsville, Mo., advise us that their business during the past year doubled that of 1898, and that they are anticipating an excellent trade during 1900.

Miscellaneous.

The Crescent Mfg. Company of Pittsburgh have been incorporated with a capital of $25,000 to manufacture plumbers' supplies. The incorporators are Jos. S. Brown and M. Gardner of Pittsburgh, Harry E. Weiskopf of Allegheny, W. A. Schofield of Wilkinsburg, and Harry F. Weaver, of Cleveland. The company have purchased the plant of the Pittsburgh Waste Company, at Connellsville, Pa., and will manufacture patent nickel plated plumbers' specialties. The Pittsburgh Waste Company have removed to Penn avenue, Pittsburgh.

The annual meeting of the stockholders of the Youngstown Iron & Steel Roofing Company, Youngstown, Ohio, was held last week. The following board of directors was elected: L. E. Cochran, G. M. McKelvey, Mason Evans, G. M. Pew and J. P. Kennedy. The directors then elected the following officers: L. E. Cochran, president; G. M. McKelvey, vice-president; Mason Evans, secretary and treasurer; John O. Pew, general manager. During the year 1899 the Youngstown Iron & Steel Roofing Company's business increased 100 per cent. over the preceding year. The company have built up a large export trade and during the past year sent many tons of its product to South Africa and other parts of the world. The company begin the new year with exceedingly bright prospects.

Articles of incorporation have been secured under the laws of Minnesota by the Shattuck Mfg. Company, of Minneapolis, to make adding and listing machines, capital $500,000, by W. P. Shattuck, W. S. Nott, C. M. Amsden, W. S. Dwinnell and A. C. Paul.

The Ludlow-Saylor Wire Company, St. Louis, at the annual meeting of stockholders, re-elected the entire list of last year, consisting of Wm. Duncan, president; Chas. L. Dean, vice-president; Frank Low, secreary and treasurer; E. J. Gould, superintendent.

Brass Mfg. & Supply Company have been organized at Chicago; capital, $15,000; general manufacturing; incorporators, E. N. Gifford, David B. Shannon, George R. Cott.

Inland Foundry Company, have been organized at Chicago; capital, $25,000; foundry and general manufacture; incorporators, John H. Olmer, Charles B. Haffenberg, Eugene Smith.

The S. Obermayer Company, Cincinnati, Ohio, have secured the exclusive rights to a graphite mine located in Canada, the analysis of which shows 97 per cent. pure graphite, a remarkable showing when it is taken into consideration that the best Ceylon graphite ever imported in commercial quantities indicated but 90 per cent. The company are in consultation with their Canadian property manager, Geo. H. Weaver, with the view of purchasing additional machinery to thoroughly develop their mines.

The Specialty Mfg. Company of Evans City, a short distance east of Ellwood City, Pa., held a board meeting last Thursday and elected the following officers: President, H. J. Ifft; vice-president, G. G. Lotz; secretary and treasurer, Dr. J. M. List. Directors: H. J. Ifft, G. G. Lotz, Henry Kriess, Newton Garvin, Edward Dambach, S. J. Irvine, A. H. Behm and J. M. List.

Dunbar Furnace Company, Dunbar, Pa., have purchased 2000 acres of coking land in Dunbar township, Fayette County, Pa. The price is said to have been $16,865.

The Iron and Metal Trades.

The present is a trying time for both sellers and buyers, since both are pretty far apart and there is practically a deadlock in nearly all the branches of the trades. Buyers have the encouragement which may come from the fact that there are some signs of yielding prices. Sellers hold that considering the fact that the severest test is applied to values at this season of the year, the markets show great inherent strength, which in the opinion of many of them may develop into a further upward movement.

In some departments of the Iron trade values are upheld by main strength by leading interests, always a method which breeds suspicion and caution. Much is deservedly made of the fact that a very large tonnage is booked for a long time to come, but professions of this kind are perhaps too freely discounted by buyers when they find that sellers follow them only too closely by a willingness to meet requirements even for the first half of the year.

The result is a nervous tension which makes the trade unusually watchful as to developments whose tendency is not very pronounced as yet. Consumption seems very heavy still, to judge from the manner in which deliveries are taken. The fact that consumers are constantly testing the market proves that they realize that any happenings likely to hamper output may swing values against them.

Very little is being done in Foundry Irons. It is worthy of note, however, that export inquiries are again making their appearance, and that a little business has been done lately. The English Warrant markets have recovered considerably lately, and whenever low rates of ocean freights can be secured business can be put through. To what extent the foreign markets would take larger quantities without flinching it is difficult to say. The Continent, from all advices, is drawing heavily upon England, and is seeking relief from famine by looking to this side.

In Steel the deadlock is almost complete. If some of the large producing and consuming interests should come together other buyers would probably follow suit soon, and we might experience a lively market.

There has been more activity in Steel Rails, some good orders having been placed in the West, among which is one for 15,000 tons for a transcontinental road. A good deal of new construction is under consideration, and this will bring out additional tonnage. The renewal requirements for this year were pretty well covered when the last advance was decreed.

Plates, which have had a somewhat sensational tumble from the famine prices of the fall months, have lately shown some strength.

The indications of an active demand for Structural Material continue good. The New York Central contract for 13,000 tons of Bridge Material has been divided among three works, Pencoyd, Pennsylvania and Detroit. Another large order is now in the market for a new West Virginia road. For buildings there is some holding back, but some important structures are going through the preliminary financial stage. Among them is one for New York which will involve close upon 10,000 tons of Steel Shapes.

In the Metal markets there is a slightly more confident tone. The Zinc smelters have been having conferences in the West, and some scheme of co-operation may be put through.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Jan. 24, 1900.	Jan. 17, 1900.	Dec. 27, 1899.	Jan. 26, 1899.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	*$22.75*	$22.75	$23.25	$11.50
Foundry Pig, No. 2, Southern, Cincinnati	*20.25*	20.25	20.50	10.75
Foundry Pig, No. 2, Local, Chicago.	23.50	23.50	23.50	11.50
Bessemer Pig, Pittsburgh	24.90	24.90	24.90	11.00
Gray Forge, Pittsburgh	**21.50**	21.25	21.00	10.00
Lake Superior Charcoal, Chicago	**25.50**	25.50	25.00	12.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**34.00**	34.00	33.00	17.25
Steel Billets, Philadelphia	36.50	37.00	nom	19.10
Steel Billets, Chicago	nom	nom	nom	18.50
Wire Rods, Pittsburgh	nom	nom	nom	.....
Steel Rails, Heavy, Eastern Mill	35.00	35.00	35.00	19.00
Spikes, Tidewater	2.65	2.65	2.65	1.50
Splice Bars, Tidewater	2.30	2.30	2.30	1.10
OLD MATERIAL:				
O. Steel Rails, Chicago	*17.00*	18.00	19.00	8.00
O. Steel Rails, Philadelphia	*21.50*	21.50	22.00	11.50
O. Iron Rails, Chicago	25.00	25.00	25.00	13.50
O Iron Rails, Philadelphia	*26.00*	26.00	27.00	13.50
O. Car Wheels, Chicago	**21.00**	21.00	20.00	12 00
O Car Wheels, Philadelphia	*20.50*	20.50	21.00	10.75
Heavy Steel Scrap, Chicago	*17.00*	18.00	18.00	7.75
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**2.20**	2.20	2.05	1.15
Common Iron Bars, Youngstown	2.15	2.15	2.15	1.10
Steel Bars, Tidewater	**2.40**	2.40	2.35	1.15
Steel Bars, Pittsburgh	2.20	2.25	2.20	1.05
Tank Plates, Tidewater	*2.35*	2.40	2.40	1.40
Tank Plates, Pittsburgh	*2.20*	2.20	2.25	1.35
Beams, Tidewater	2.40	2.40	2.40	1.40
Beams, Pittsburgh	2.25	2.25	2.25	1.30
Angles, Tidewater	2.40	2.40	2.40	1.30
Angles, Pittsburgh	2.25	2.25	2.25	1.20
Skelp, Grooved Iron, Pittsburgh	*1.90*	2.05	1.95	1.20
Skelp, Sheared Iron, Pittsburgh	*2 30*	2.35	2.35	1.35
Sheets, No. 27, Chicago	3.00	3.00	3.00	2.00
Sheets, No. 27, Pittsburgh	**2.90**	2.85	2.80	1.95
Barb Wire, f o.b. Pittsburgh	**3.80**	3.80	3.55	1.95
Wire Nails, f o.b. Pittsburgh	**3.20**	3 20	2.95	1.50
Cut Nails, Mill	**2.50**	2.50	2.45	1.20
METALS:				
Copper, New York	16.50	16.25	16.50	15.75
Spelter, St. Louis	4.55	4.30	4.55	5.15
Lead, New York	4.70	4.70	4.70	4.00
Lead, St. Louis	**4.65**	4.67½	4.60	4.05
Tin, New York	**26.50**	26.50	24.00	24.50
Antimony, Hallett, New York	9.75	9.75	9.75	8.75
Nickel, New York	38.00	38.00	38.00	38.00
Tin Plate, Domestic, Bessemer, 100 lbs , New York	4.84	4.84	4.84	3.15

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, January 24, 1900.

Purchases of various materials by railroads have been a feature of this market for the past ten days or two weeks. The fact assumes special prominence at this time when general trade is rather quiet. We have had periods, of course, when railroad buying covered a much greater tonnage than now, but it is encouraging under present conditions to find that railroad interests are disposed to be liberal buyers. They are covering their requirements in spite of high prices. The Coke famine continues getting worse instead of better. Leading Coke producers have absolutely refused the past week to entertain orders for large quantities from consuming interests here for future delivery. The shortage of cars is also seriously felt, especially from the South and from the Coke region.

Pig Iron.—The volume of business is small. Occasional orders are being entered for lots running up to 500 tons or more, but no disposition is shown to make contracts of good size for future delivery. Inquiries are being received for large quantities, but they are made evidently for the purpose of testing the market. Heavy consumers are in a waiting mood, ready to enter the market immediately upon the appearance of influences which might indicate either a strengthening of prices or the danger of a shortage in the supply. Lacking in developments of this kind they will wait until nearer the time when present contracts may expire. It is possible under such conditions that trade may be quiet for a month or two, while, on the other hand, circumstances may cause a heavy business at almost any time. Consumption is proceeding on a large scale, and furnace companies quite generally are in arrears on deliveries. A good demand is thus occasioned for small lots for sharp delivery. Pig Iron merchants in the habit of purchasing good quantities of Iron for Chicago delivery, and taking their chances on selling it on track, report no difficulty in disposing of every car before it arrives here. Prices are firmly maintained by furnace companies, but

now and then a resale is made at some concession by foundrymen. We quote for cash as follows:

Lake Superior Charcoal	$25.50 to $26.00
Local Coke Foundry, No. 1	24.50 to 25.00
Local Coke Foundry, No. 2	23.50 to 24.00
Local Coke Foundry, No. 3	22.50 to 23.00
Local Scotch, No. 1	25.00 to 25.50
Ohio Strong Softeners, No. 1	25.50 to 26.00
Southern Silvery, according to Silicon	25.50 to 27.00
Southern Coke, No. 1	22.85 to 23.35
Southern Coke, No. 2	21.85 to 22.35
Southern Coke, No. 3	20.85 to 21.30
Southern Coke, No. 1 Soft	22.85 to 23.35
Southern Coke, No. 2 Soft	21.85 to 22.85
Foundry Forge	20.85 to ....
Gray Forge and Mottled	20.85 to ....
Southern Charcoal Softeners, according to Silicon	21.85 to 25.85
Alabama and Georgia Car Wheel	24.85 to 25.85
Malleable Bessemer	25.00 to 26.00
Standard Bessemer	.... to ....
Jackson County and Kentucky Silvery, 8 per cent. Silicon	32.30 to 32.80

Bars.—Orders for Bar Iron are not large, but manufacturers report a business of fair proportions made up of numerous small lots. Their capacity is well engaged, and they are not concerned about the present condition of comparative quietness. The same state of affairs prevails in Soft Steel Bars, in which an excellent demand is observed for car lots, but contracting is quiet. Mill shipments are continued at 2.30c. to 2.40c., Chicago, for Common Iron; 2.35c. to 2.45c. for Soft Steel Bars, and 2.65c. for Bands. Continued improvement is noted in stock trade. Better deliveries by the mills are helping the movement from jobbers' stocks. Assortments are now much better, but the demand from stock is so large that continuous deliveries by mills are necessary to keep this branch of trade in good shape. Jobbers quote small lots from stock at 2.90c. upward for Bar Iron, 2.60c. upward for Soft Steel Bars and 3.90c. to 4c. for Norway and Swedish Iron.

Car Material.—Many new cars are being ordered by the railroads, but car builders are not in the market for much material, having evidently covered requirements by previous contracts.

Structural Material.—Much business is under negotiation, some of which is for buildings, but much more for bridge work. The aggregate thus in sight runs up to high figures. Some of it may be closed in quite soon. A good tonnage is running up daily in sales of small quantities. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 2.45c. to 2.60c. A good demand is reported from the local yards with prices of Beams and Channels quoted at 2.90c to 3c.; Angles, 2.70c. rates, and Tees, 2.85c.

Plates.—The inquiry is much better, and the outlook has grown a great deal brighter. Good orders have been placed for mill shipments, among them being one lot of 2000 tons of Boiler and Tank Plate. Prices depend upon specifications, tonnage and other elements, but mill shipments, Chicago delivery, may be quoted about as follows: Tank, 2.50c. for narrow widths and 2.60c. for the general range of sizes; Flange, 2.70c. to 2.90c.; Marine, 3c. to 3.25c.; Fire Box, 3.30c. to 5½c. Jobbers quote Tank from store at 3c. to 3.15c., and Flange, 3.25c. to 3.50c.

Merchant Pipe.—A somewhat better demand is seen, but trade is still rather quiet. Carload lots of Black Merchant Pipe are quoted at 50, 10 and 5 to 50 and two 10's, and Galvanized at 57 and two 10's.

Sheets.—Prospects continue to improve. A particularly good trade is reported in Galvanized Sheets, which is better than usually felt at this season. Black Sheets are quiet except the heavier gauges, which are in good demand. Sales agents find quotations taking business now which would have been turned down two weeks since. Mill shipments of No. 27 Black are quoted at 3c. to 3.15c., Chicago, and Galvanized Sheets at 75 to 75 and 5 per cent. Jobbers report a fair trade, and quote small lots at 3.25c. to 3.40c. for No. 27 Black, and 70 and 10 per cent. off on Galvanized Sheets.

Merchant Steel.—The character of trade is unchanged, current buying consisting of small lots only. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward.

Rails and Track Supplies.—A large tonnage has been placed for Standard Section Rails, including one lot of 15,000 tons, another of 10,000 tons and several smaller sales. Some export business was included in the transactions of the week. Prices are firmly held at $35 to $45, according to quantity. Light Rails are moving nicely, good sales having been made to domestic buyers, while some orders have been taken for Japan, China and other countries. Prices are held at $35 to $40, according to section. A good business is being done in Track Fastenings. Railroad companies are increasing the orders placed by them some time since. Prices of Track Fastenings are as follows: Steel Fish Plates, 2.25c. to 2.50c.; Iron Fish Plates, 2.30c. to 2.50c.; Spikes, 2.65c. to 2.75c.; Track Bolts, with Hexagon Nuts, 3.95c. to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.20c.; Iron Links and Pins, 3.15c.

Old Material.—The supply still seems more than ample to meet the requirements of the limited demand. Prices of everything except Old Car Wheels continue weak. Sales have been made to consumers in some instances at lower rates than our quotations. Old Car Wheels, however, are scarce and firm. Approximate market prices are as follows, per gross ton:

Old Iron Rails	$25.00 to $25.50
Old Steel Rails, mixed lengths	19.00 to 20.00
Old Steel Rails, long lengths	21.40 to 22.50
Relaying Rails	28.00 to 30.00
Old Car Wheels	24.00 to 24.50
Heavy Melting Steel Scrap	17.50 to 18.50
Mixed Steel	12.50 to 13.00
Iron Fish Plates and Angle Bars	24.00 to 25.00
Steel or Mixed Iron and Steel ditto	20.00 to 21.00
Iron Car Axles	27.00 to 28.00
Steel Car Axles	24.00 to 25.00
No. 1 Railroad Wrought	23.50 to 24.50
No. 2 Railroad Wrought	20.00 to 21.00
Shafting, Iron and Soft Steel	23.00 to 24.00
No. 1 Wrought	17.00 to 18.00
No. 1 Country Wrought	15.50 to 16.25
No. 1 Mill	12.00 to 13.00
No. 2 Mill	8.00 to 9.00
No. 1 Busheling	14.50 to 15.00
No. 2 Busheling	10.00 to 11.00
Iron Car Axle Turnings	14.50 to 15.00
Soft Steel Car Axle Turnings	13.50 to 14.00
Machine Shop Turnings	12.00 to 13.00
Wrought Drillings	11.50 to 12.00
Cast Borings and Drillings	9.00 to 10.00
Mixed Borings and Turnings	9.00 to 10.00
No. 1 Boilers, cut	14.50 to 15.00
No. 2 Boilers, cut	6.00 to 8.00
Boiler and Ship Scrap	16.00 to 17.00
No. 1 Cast	15.00 to 15.50
No. 2 Cast	10.00 to 10.50
Railroad Malleable Cast	15.50 to 16.00
Agricultural Malleable Cast	14.50 to 15.00

Metals.—Prices are steady and unchanged, carload lots of Lake Superior Copper being quoted at 16⅞c., Casting brands, 16⅝c.; Spelter, 4.45c., and Pig Lead at 4.70c. for Desilverized.

Tin Plates.—A rather better demand in experienced for both Bright and Roofing Plates than usual at this season. The special feature in Bright Plates is the continued good demand for furnace sizes. The movement of Roofing Plates is quite good, owing undoubtedly to the fine weather, which is unusually favorable for building and other outdoor work.

The Minerva Pig Iron Company, Milwaukee, Wis., manufacturers of Pig Iron, are now their own selling agents. They sell all grades, either by fracture or by analysis regardless of fracture, as the buyer may elect when ordering.

The Western Tube Company, Kewanee, Ill., manufacturers of Wrought Pipe, have opened an office in Rooms 722 and 723, Marquette Building, Chicago, under the management of Samuel O. Dugger. This is one of the very few Wrought Pipe companies now operating independently. They make a full line of Merchant Pipe as well as Square and Rectangular Tubing for architectural purposes, but do not produce Boiler Tubes.

T. S. Casey, 715 Marquette Building, Chicago, has been appointed sole representative in charge of the business in the Chicago territory of the Wheeling Steel & Iron Company, Wheeling, W. Va., manufacturers of Bessemer Steel Billets, Slabs and Blooms, Cut Nails, Iron and Steel Sheets, &c.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., January 24, 1900.

(By Telegraph.)

There is nothing of special interest in the market today. The volume of business is large and inquiries denote the probability of increased activity in the near future, although there is an unsettled feeling as regards Billets, and also in Finished Material of some descriptions. Sales of Pig Iron are light, but deliveries are well taken, so that makers are in a strong position, and are under no necessity to reduce prices, except on their own judgment as to future conditions. At the present time many of the furnaces are behind in their deliveries and seem quite unable to catch up, so that the shortage of Iron may again be felt during the spring months. There

is hesitancy among buyers because of the mixed ideas in regard to prices, but in a general way it may be said that prices for early delivery are stronger than those for the last half of the year.

(By Mail.)

The situation in Iron and Steel is somewhat disappointing, although there is a pretty good demand and fairly steady prices. The protracted dullness is beginning to tire people, however, not that there is any scarcity of work, but people act as though they thought it might not be so easily obtained after a while; consequently they are discounting the future, and taking what they can get, if it does not involve too much of a sacrifice in prices. At the moment the market is controlled a good deal by sentiment, and for a while sentiment may continue to control it, although eventually conditions must rule. The great trouble at this time is to determine what the actual conditions are, as they appear to be very contradictory. There are no stocks to bother about, there is no scarcity of immediate orders, but for some reason or other sellers are anxious to secure additional business. Buyers are quick to see the change of attitude, and quick to change their own, and yet so far as appears on the surface there is not the slightest reason for uneasiness, although it is quite possible that the change of feeling may affect prices temporarily. Except Pig Iron, almost everything on the list if not exactly lower is feverish and unsettled, with a disposition on the part of sellers to keep their trade well in hand, even if it has to be done at a small sacrifice in prices. Of course, anything like vigorous buying would soon start things up again, but large buyers claim that it will require lower figures than are quoted to-day before they take hold of the market. It is a stand off at present, and it is impossible to say with confidence when the deadlock will be broken, or which end will be the first to yield.

Pig Iron.—The market is quiet, and hardly as firm as it was a week ago, although there is very little Iron pressing for sale. Stocks on furnace banks are extremely light, and as the greater portion of the output is taken on old contracts the surplus for sale is not of much importance. For deliveries during the last half of the year, however, there is a disposition to accept a full line of business when it can be had at something near to the regular quoted rates, but buyers are keeping close in shore, and show very little interest as regards long contracts. The consequence is that the market presents a very different aspect to what it did a year ago, when everybody was jumping for material without much regard to prices or dates for deliveries. A dull market does not necessarily indicate a declining market, but it is wearying to holders, and not conducive to enthusiasm on either side. There is one feature, however, which may become an important factor in case there is any appreciable decline in prices—viz., the extraordinary condition of the European markets. The scarcity of fuel and of labor in Great Britain and on the Continent is assuming a most serious aspect, and it is difficult to see how they can pull through without drawing heavily on this country for supplementary supplies of Iron and Steel. Apart from this, however, there is no reason to apprehend that there will be any material falling off in consumption on this side, so that while prices may not advance, there is no basis for figuring on a decline, except transiently and of insignificant proportions. The range of prices for seaboard deliveries are about as follows: No. 1 X Foundry, $25 to $25.50; No. 2 X Foundry, $23.25 to $24.25; No. 2 Plain, $22.50 to $23; Standard Mill Iron, $20.50 to $21; Basic, $23 to $23.25; Bessemer, nominal, $24.50 to $25.50; Bessemer Low Phosphorus, $27 to $28, and Charcoal Iron, $28 to $30.

Muck Bars.—There is a slightly better feeling and sellers are asking about $30.50 to $30.75, f.o.b. cars their mills. A few sales have been made at better figures than these, but deliveries were nearby, so that cost to the buyer was something less than $32, delivered.

Billets.—The tension in this department is as great as ever, both sides being stubbornly firm. Some business has been done at about $36.50, but buyers consider that figure out of proportion with the rest of the market, and seem inclined to wait for better prices for the product or lower prices for the material.

Plates.—The demand is very firm, and mills are running to their full capacity, but there is in some quarters an insatiable desire for business, consequently prices are very irregular. The absence of uniformity is said to be due to the eagerness of some of the new mills to fill up with work, and until this is accomplished it is not expected that there will be much improvement, particularly as those with an established trade are not likely to see it drop into new hands without a fight for it. Ordinarily prices are about as follows for seaboard or nearby deliveries, but lower prices have been named in special cases: Steel Plates, ¼-inch and thicker, 2.40c. to 2.45c.; Shell, 2.50c. to 2.60c.; Flange, 2.75c. to 2.85c.; Fire Box, 3.10c. to 3.15c.; Charcoal Iron Plates, C. H. No. 1, 3c.; Best Flange, 3.50c.; Fire Box, 4c.

Structural Material.—Business in this department is very satisfactory, mills having plenty of work in hand with daily incomings which promise well for continued activity. Bridge and structural work is coming in in large volume, so that there is every reason to believe that the spring and summer trade will compare favorably with that of 1899. Meanwhile prices are steady, and for seaboard and nearby deliveries are quoted as follows: Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c, f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

Bars.—There is a large volume of business, and mills seem to get all the work they can handle, but there is great irregularity in prices. As the trade perfectly understand there are a great many ways of ostensibly holding prices firm, while at the same time they may be selling at considerably lower figures. Refined Iron may be sold as Common Iron, or Common as Refined, but the understanding between buyer and seller is what really fixes the price. A great deal of Iron has been sold lately at 2.07½c. to 2.10c., delivered. Sellers call it Common Iron, buyers say it is good enough to be called Refined Iron,, so it all depends upon "what is in a name." There is plenty of business, however, and prices are nominally as follows for Philadelphia or nearby deliveries: Ordinary Iron, 2.07½c. to 2.10c.: Refined Iron, 2.20c.; Test Iron, 2.30c.; Steel Bars, 2.50c. to 2.60c.

Sheets.—The market is extremely dull, and prices very unsettled. Mills that turn out only the best grade of Sheets find it very difficult to meet competition, as the disposition to-day seems to be to lose sight of quality in the endeavor to secure a low quotation. Small lots best makes are quoted as follows (Common Sheets two-tenths less): No. 10, 2.75c. to 2.85c.; No. 14, 2.95c.; No. 16, 3c.; Nos. 18-20, 3.05c.; Nos. 21-24, 3.15c.; Nos. 26, 27, 3.25c.; No. 28, 3.35c. to 3.45c.

Old Material.—The irregularity which has been a feature of the market for several weeks past is still in evidence. The open winter has enabled a great deal of stock to be brought in, consequently supplies are larger than was calculated upon. At the inside quotations, however, it is not difficult to find buyers, but in many cases holders require $2 or $3 per ton more to save them from actual loss. Bids and offers are about as follows for deliveries in buyers yards: Choice Railroad Scrap, $23 to $25; No. 1 Yard Scrap, $19 to $20; No. 2 Light Scrap, $13 to $14; Machinery Cast, $17.50 to $18.50; Heavy Steel Scrap, $20 to $21; Old Iron Rails, $26 to $28; Old Steel Rails, $21.50 to $22.50; Wrought Turnings, $15 to $16; Cast Borings, $13.50 to $14; Old Car Wheels, $20.50 to $22; Iron Axles, $26 to $28; Steel Axles, $27 to $29.

Cincinnati. *(By Telegraph.)*

Office of *The Iron Age*, Fifth and Main streets,
CINCINNATI, January 24, 1900.

A pretty dull state of affairs exists in the Pig Iron market, that statement applicable, however, only to new business. The consumption of Iron shows no signs of a let up, and buyers are as urgent for deliveries as they have been. Outside of a normal run of small orders the only movement on buyers' part is a moderate inquiry which looks more like feeling the market than the preliminary of buying. It seems that buyers as a class distrust the stability of the price-list and are unremitting in their efforts to bear down values. With but few exceptions, and these said to be chiefly among the newly started and the soon to be started furnaces, Iron producers are standing very firmly by their price-lists and are willing to make no concessions to secure trade which will have to come to them sooner or later. Despite this show of firmness and the exceedingly strong statistical position, there is a feeling of weakness manifest, especially in Southern Iron. Some parties, said to be the new furnaces, are offering Iron at a cut of 25c. to 50c. on regular quotations. The amount of stock thus offered is not believed to be large, but it answers the purpose of making a seeming weakness in the general market and of delaying the expected buying movement. It is claimed that No. 2 Foundry is being offered as low as $17, Birmingham, and some is undoubtedly being offered at $17.25. Gray Forge and No. 4 Foundry are quoted in some quarters as low as $15.50. A great deal of interest is manifested in the situation, and the overwhelming sentiment in selling circles is against anything like a decline of any consequence. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$21.50 to $21.75
Southern Coke, No. 2	20.50 to 20.75
Southern Coke, No. 3	19.50 to 19.75
Southern Coke, No. 4	19.00 to 19.25
Southern Coke, No. 1 Soft	21.50 to 21.75
Southern Coke, No. 2 Soft	20.50 to 20.75

Southern Coke, Gray Forge	18.75	to 19.25
Southern Coke, Mottled	18.75	to 19.25
Ohio Silvery, No. 1	....	to 30.00
Ohio Silvery, No. 2	....	to 29.00
Lake Superior Coke, No. 1	24.00	to 24.50
Lake Superior Coke, No. 2	23.00	to 23.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling Grades	$25.75 to $26.25
Standard Southern Car Wheel, No. 2	24.75 to 25.25
Lake Superior Car Wheel and Malleable	25.50 to 26.50

Old Material.—The market is very much weaker, and with the exception of Car Wheels, all grades are quotably $1 to $2 lower. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $20 to $21 per net ton; Cast Scrap, $12 to $13 per gross ton; Axles, $25 per net ton; Iron Rails, $25 per gross ton; Car Wheels, $22 to $22.50 per gross ton.

Plates and Bars.—The market is quieter, with no change except that Angles are quotably 10c. lower. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.55c.; small lots, 2.80c.; Sheets, No. 10, 3c. to 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 2.75c. to 3c.

St. Louis. (*By Telegraph.*)

Office of *The Iron Age*, 1205 Chemical Building, St. Louis, January 24, 1900.

Pig Iron.—Pressure to ship irrespective of whether it can be done on recent contracts or unfilled ones written at the low prices is about the only feature in the Pig Iron market. Iron is wanted, and decidedly wanted. To our knowledge little if any slackening up is noted in activity of foundries. A keen observer of the foundry industry says that not only is it expected that 1900 will be a successful year, but that the trade is full of work now and a scarcity of molders exists. Some consumers feel prices will not further advance, and that no occasion is apparent for protecting themselves except as regards supply. The orders coming in just now are of quick nature and comparatively small quantities, but cannot readily be satisfied. Coke is in no easier supply, and offers of practical bonuses cannot stimulate output. Prices of Iron are firm in this market, at no change. We quote on cars St. Louis:

Southern, No. 1 Foundry	$22.25 to $22.50
Southern, No. 2 Foundry	21.25 to 21.50
Southern, No. 3 Foundry	20.25 to 20.50
No. 1 Soft	22.25 to 22.50
No. 2 Soft	21.25 to 21.50
Gray Forge	20.00 to 20.25

Bars.—Inquiries as compared with first of the year are quite free for Bars, with Shapes and Sheets not neglected. The latter show some little strength, shared also by Light Plates. The consumption of Bars has kept up steadily, but jobbers did not immediately cover their sales by replacement purchases. For the present at least no great interest is felt by large buyers except as to reasonable assortment of stock. Purchases of needed material are made in conviction that the market is firm and stable. Agricultural implement dealers are presenting prospective needs. Mill quotations on Iron remain at 2.35c., base, half extras, East St. Louis, in carload lots. No change has taken place in jobbers' prices, which are 2.75c. to 2.90c., base, full extras, as to quantities and assortment. Steel Bars are now definitely quoted by mills at 2.40c., base, half extras, in carload lots, East St. Louis. Jobbers' price is 3c., full extras.

Rails and Track Supplies.—The general line of railway supplies are in good movement, and while manufacturers looked for a dropping off at the first of the year, January trade has thus far proven exceptionally good. Track Supplies are very quiet, and at this period concessions are had from jobbers on several items. We quote: Splice Bars, Steel, 2.55c.; Iron, 2.55c.; Track Bolts, with Square Nuts, are now 3.70c.; with Hexagon Nuts, 3.90c.; Spikes, 2.75c.; Steel Links and Pins, 3.20c.

Pig Lead.—Strength is still apparent in the Pig Lead market, and buyers must pay 4.65c. for Desilverized and Chemical, with but little to be had. The demand is strong, and an open order in one case given for 10 to 15 cars Chemical, with no immediate prospect of refiner being in position to fill. Soft Missouri is quoted at 4.60c. An increase of 25c. was had for Lead Ore, which brought $28.25 per 1000 lbs.

Spelter.—An improvement gratifying to smelters has taken place. The last sale was at 4.50c., and to-day brought offers of 4.55c. for 100 tons, February delivery, but met with no acceptance, as higher prices are expected. It was thought the market advanced somewhat abnormally on account of the adjourned meeting of smelters held here Monday. At this meeting it is said all smelters were represented. Zinc Ore, top price, remained at $35 per ton, but movement was rather better.

Birmingham.

BIRMINGHAM, ALA., January 22, 1900.

The past week showed a material increase in the inquiry for Iron as also in completed transactions. There was a report of a concession of 25c. on some of the lower grades, but no one will plead guilty to making it. If made, it was an indirect concession which doesn't count unless you are the buyer. Any way, the quotations are unchanged on the basis of $17.50 for No. 2 Foundry, with unquestionable evidence of the refusal of business at any less price. It is curious to note how opinion has crystallized on our side of the market. But a few weeks ago it was divided, with some holding to the view that high water mark in prices had been reached, while all were unanimous in deprecating any further advance. To-day there is not one in the trade here who does not admit the strength of the situation in Iron and anticipate a further advance. Yet they don't want to see any advance in price. This revulsion of feling is the result of information concerning the demands that will soon come for satisfaction. This is confirmed by the materially increased inquiry and the readiness with which moderate buyers absorb the offerings. There have been no large buyers yet, and when they come in they will be a disappointed set. A prominent Iron magnate discussing this said, "For months to come our output on Basic, No. 2 Foundry, No. 2 Soft and Gray Forge is fully sold. On Silvery, No. 1 Soft, Nos. 3 and 4 Foundry, we can spore an amount not to exceed 2000 tons of any one grade." Another said, "I dread to see the demand that is in evidence because for the first six months we have our full capacity engaged." And it is this way all along the line. Supplemental to this a very fair export inquiry has sprung up. The past week the margin against business ranged from 50c. to $1 per ton. The week closed with negotiations in progress, showing some anxiety on the part of the foreign trade to get in. Export Iron is going out. Over 6000 tons the past week were arranged for by one shipper. The furnace interests of the district are not in this movement. The furnaces lately blown in are reported as working very smoothly, and turning out satisfactory Iron. But it must not be forgotten that none of this Iron will go upon the open market. It was all placed for long months ahead before their rehabilitation began. To a disinterested observer it appears not to be a question of placing the Iron, but simply a question of getting it. There is no practical change in the Coke situation. It is easing up so slowly as hardly to be noticeable. Some has been brought here from the Pocahontas field at a cost that materially diminishes profits. No one interest has a surplus, and when any is sold it is a matter of favor.

The Steel mill is now progressing favorably, as the difficulties encountered have been smoothed over. As evidence of the character of the product it makes it can be stated authoritatively that out of at least 150 heats so far turned out every one has come within the limit of requirements. Inquiry for the product continues, but no sales are reported, and probably won't be until they increase production. The erection of the Steel castings plant has commenced, and the outlook for their business is very flattering. It will be the only plant of its kind south of the Ohio River.

The Birmingham Foundry & Machine Company who a short time ago shipped via New York to the Sandwich Islands five cars of machinery, will soon send five cars more to the same destination. This is mentioned as evidence of the expansion of trade.

An important change was made in the *personnel* of the Alabama Steel & Wire Company at a meeting of the stockholders held the past week. James Bowron, first vice-president of the Tennessee Coal, Iron & Railroad Company, was elected a director, to succeed C. E. Robinson, E. T. Schuler was elected president and G. H. Schuler, secretary and treasurer. The three constitute the Board of Directors. A portion of the plant will begin operation about February 1.

The Dimmick Pipe Works are being rapidly pushed to completion. Some of the buildings are ready to the roofs, while the outer walls of all are completed. They anticipate that before March is ended they will be manufacturing Pipe. It looks like it, as they are in the market now for Iron for that delivery. Both the Louisville & Nashville and the Southern railroads have their engineer corps running lines that will traverse the Warrior coal fields in the Bessemer district and connect them primarily with Ensley City, which will when all its industries are in full bast, be a heavy consumer

of coal. There is talk of an early and a rapid development of that field. Some color is given to it from the fact that the owner of the largest interest in it has been asked to name his price for his holdings.

The continuous demand for machinery is the best evidence of activity in the mining interests. There seems to be no end to it. With the advent of spring it is more liable to increase than decrease. Every week sees something added to the district to increase its importance in a mining or manufacturing way. Contributions and bonuses in the way of inducements for locating enterprises here are a thing of the past. Its "love's labor lost" to pass the hat around for such aid. All that come now come because self interest impels them. So far those who have come acted wisely, as all are doing well.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, January 24, 1900.

(By Telegraph.)

Pig Iron.—The Bessemer Pig Iron market is quiet as far as sales are concerned, but prices are very strong. The minimum of the market is $24, Valley Furnace, for first half, and it is probable this price will soon be fixed for second half. Gray Forge is in good demand and scarce. It has sold as high as $21.50, Pittsburgh, with some furnaces quoting $21, equal to $21.85, Pittsburgh. Valley furnaces, according to agreement recently made, are holding Gray Forge at $21.50 at furnace. It looks as though prices on Gray Forge will be higher. Foundry Iron is in good request and the market is strong. We quote Bessemer Pig, $24; Gray Forge, $21.50, the association price, both at Valley furnace. No. 2 Foundry, $22.35 to $22.50 for Southern; $23 to $23.25 for Northern; Southern Gray Forge, $20.75 to $21; local Gray Forge, $21.50; Bessemer, $24.90, all f.o.b. Pittsburgh. We note a sale of 5000 tons of Bessemer at $24, Valley furnace; 300 tons of Gray Forge for February and March at $21.50, Pittsburgh; 2000 tons of local Gray Forge at $21.25, Pittsburgh, also 3000 tons of Standard Bessemer at $24.90, Pittsburgh.

Steel.—There is not much doing, but the market is strong at $34 to $35, f.o.b. Pittsburgh, for Bessemer Billets. Basic Open Hearth Billets are $42.50 to $43 at mill. A sale of 1500 tons of Open Hearth Billets, of special size, is reported at about $45, maker's mill.

Sheet Bars.—We continue to quote Sheet Bars, long lengths, at $36 at mill. The market continues quiet, but there is no indication at present of the price being lower.

Muck Bars.—The quotation last week of $30 to $30.50, Pittsburgh, for Muck Bars was an error in telegraphic transmission. Standard grade Muck Bars are higher and we quote at $33.25 to $33.50, f.o.b. Pittsburgh. We note a sale of 500 tons of standard grade at $33.25, Pittsburgh.

Spelter.—The market is strong and higher. We quote at 4.60c., Pittsburgh, for best grades.

(By Mail.)

A somewhat better demand for Finished Material is reported, particularly on several lines which have been unusually quiet for the past month or more. In the Sheet trade a better business is reported, and the mills are taking some orders. Bars are also a little better, and the recent weakness in prices seems to have disappeared. The fact that prices on Coke are so high and Pig Iron very firm, is no doubt doing much to hold up the market on Finished Material. There is some inquiry for Steel and sales have been made at $34 to $35, maker's mill. The whole market seems to be somewhat improved, particularly so far as demand is concerned. No one expects higher prices, and sellers would be entirely satisfied to take business at to-day's figures.

Ferromanganese.— No large lots are being sold, and on small lots for prompt shipment $125 is quoted.

Structural Material.—The Structural mills are still engaged for several months ahead, principally on old contracts taken last year. Some orders are still being filled at low prices. The bridge material for the New York Central Road is likely to be given out any day. It involves about 13,000 tons. Some Chicago work has recently been placed with a local mill. A good deal of tonnage is being entered, and it might be stated that the mills are pretty well fixed for first half of the year. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.35c. to 2.50c., Pittsburgh.

Plates.—There is still considerable range in prices on Plates, some of the mills rolling narrow widths quoting low prices, while other mills that are well filled up and roll a full complement of sizes are quoting 2.50c. The market for Tank, ¼-inch, might be fairly quoted at 2.25c. for narrow widths and 2.25c. to 2.50c. for wider sizes. We quote: Shell, 2.40c. to 2.50c.; Flange, 2.50c. to 2.60c.; Marine, 2.60c. to 2.70c.; Fire Box, 3c. to 3.25c., depending on quality. The Plate market is somewhat quiet, and tonnage being placed is light. Some mills would probably shade our quotation on Narrow Plates.

Sheets.— There is a distinct improvement in the Sheet market, and considerable tonnage has been placed recently for delivery in the next two or three months. Buyers evidently believe that if the combination goes through prices will be higher. We have advanced prices and now quote: No. 27 Black Sheets, one pass, 2.90c. to 3c.; No. 28, 3c. to 3.10c.; Galvanized, 75 and 5 per cent., and on very desirable orders 75 and 7½ per cent., 15c. freight. Some mills are, we are advised, holding both Black and Galvanized Sheets at our higher prices.

Bars.— There is a fairly good demand for Iron and Steel Bars, but mostly for small lots. Prices are at a point where buyers do not believe it policy to stock up, and as a result demand is mostly for small lots. However, the aggregate tonnage is fairly large. We quote Common Iron Bars at 2.15c., Valley mill, and Steel Bars at 2.20c. to 2.25c., Valley mill. Local mills quote Steel Bars at 2.25c., minimum. It is intimated that on very desirable orders a few mills might shade above prices.

Merchant Steel.—The situation is quiet, but the tone of the market is fairly strong. We quote: Toe Calk, 2.75c., base; Tire, 2.50c. to 2.60c.; Open Hearth Spring, 3.25c.; Plow Slabs, 2.75c. to 3c.; Machinery Steel, 2.50c.; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Rolled Lay Steel, 3.75c.; Hammered Lay Steel, 4.50c.; Tool Steel, 7c. and upward, freight allowance not to exceed 25c.; terms, except Tool Steel, 30 days, net cash.

Steel Rails.—The market is quiet, the mills running on old contracts. We quote at $35 at mill for Standard Sections.

Skelp. — We are advised that there is a little better inquiry for Skelp, but prices have not as yet shown any improvement. We quote Grooved Iron and Steel Skelp at 1.90c. to 2c., at mill, but are advised that some of the larger mills are quoting as high as 2.10c. We quote Sheared Iron and Steel Skelp at 2.30c. to 2.35c., f.o.b. Pittsburgh. On Sheared sizes it is probable some mills would shade these prices.

Pipes and Tubes.—There is a fair demand for Merchant Pipe, but the market is without special feature. We quote: Merchant Pipe, Black, 50 and 10 and 10 per cent.: Galvanized, 57 and 10 and 10 per cent. in carload lots, delivered. Small lots of Black are quoted at about 50 and 10 per cent. at mill, and Galvanized 57 and 10 per cent. at mill. We quote Screw and Socket Joint Casing at 37½ per cent.; Inserted Joint, 32½ per cent., with an optional 5 per cent. to dealers. We quote Boiler Tubes as follows: 1¼-inch and 1½- inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered.

Connellsville Coke.—Last week there were 19,196 ovens in the Connellsville region active and 796 idle, the output being 205,283 tons. The Coke market continues very strong. Furnace Coke is quoted all the way from $3 to $3.50 a ton for small lots for prompt shipment. Foundry Coke is quiet at $3.25 to $3.90 a ton.

Iron and Steel Scrap.—The Scrap trade is somewhat dull, consumers not having come into the market to buy to any extent since the shut down of the mills at the first of the year. Prices on nearly all kinds of Scrap are off to some extent. We quote Cast Iron and Steel Borings, $15.50 gross ton; Steel Rails, short pieces, $23.50 to $24; long pieces, $22.50 to $23; Low Phosphorus Melting Stock, Phosphorus guaranteed 0.035 or under, $27 to $28; Mixed Steel, $20 to $20.50; Plate Shearings, $22; No. 1 Railroad Wrought Scrap, $23.50 to $24 net ton.

The Pittsburgh Steamship Company's fleet, connected with the Carnegie-Oliver interests, will consist in the coming season of 13 vessels, six of which are now building. Four will be taken from the Lake Superior Iron Company, and the three boats, the "Linn," "Carrington" and "Black," purchased a short time ago, make up the number.

Cleveland.

CLEVELAND, January 23, 1900.

Iron Ore.—There is no indication as yet of spring activity in the Iron Ore sales market. Some inquiry is reported, but it has not as yet developed sales, and there is little to indicate that there will be a rush of buyers at any time soon to cover the Ore which yet remains unsold for 1900. As explained in previous correspondence, there is very little of this. On the other hand, there are comparatively few consumers who do not know where their supply is to come from, at least up to the close of the present year. The very open winter makes it practically certain that navigation will open unusually early, and every effort is being made to rush dock work and other facilities preparatory to it. The scramble for boats still continues in an abated degree. One of the transactions of the past week was the sale of the steamer "E. M. Peck" by the Northern Transportation Company of this city to the Calumet Transit Company of Chicago. The steamer will probably be employed in carrying Ore from Escanaba to South Chicago. The most interesting development of the week in Iron Ore circles is found in the announcement that the Carnegie interests have contracted with the Webster, Camp & Lane Machine Company of Akron, Ohio, for two more of the mechanical Ore unloading machines similar to the machine installed on the Carnegie docks at Conneaut last fall for experimental purposes. This order indicates clearly that the practicability of the machine has been demonstrated and the results will naturally be far reaching, inasmuch as not only will it be possible by the use of these machines to greatly reduce the time for unloading vessels, but the dock interests will be freed from the tyranny of the Ore Unloaders' unions, which has been exerted in so unreasonable a degree during the past year, and bids fair to prove even more irksome next season. The formal organization of the Pittsburgh Steamship Company brings together all the vessel property of the Carnegie-Oliver interests. The general manager, Edwin S. Mills, will be located at Cleveland, and the boats will be operated from this city. Dock managers are elated this week over the improvement in the car situation, and should present conditions continue there is no doubt but that all the Iron Ore on Lake Erie docks can be cleaned up by the opening of navigation. At Ashtabula, for instance, the leading Ore unloading port on the lakes, in the neighborhood of 50 cars loaded with Ore are now being dispatched to furnaces daily. This is more than double the daily average for some weeks past. At the annual meeting of the Lake Carriers' Association, last week, steps were taken to urge Congressional action for the improvement of the rivers connecting lakes Superior, Huron and St. Clair, in order that next season may see no blockades such as those which a few months ago cost Ore shippers more than $1,000,000. The latest quotations on Ores are as follows: No. 1 Bessemer Specular and Magnetic, $6 to $6.25; No. 1 Non-Bessemer Specular and Magnetic, $5; Bessemer Red Hematite, $5.25; Non-Bessemer Red Hematite, $4.

Pig Iron.—The Coke situation continues to be the most perplexing feature of the situation. Coke appears to grow scarcer, rather than more plentiful, and one, two, and three day shut downs may be expected with recurring frequency. There is no longer a doubt but that January production is going to fall several notches below the output in December, and the worst phase of the situation is found in the fact that there is no early relief anticipated. The opening of spring will doubtless bring an easing of conditions, but nothing need be anticipated before that time. The demand during the past week has been moderate. Consumers seem to have fair stocks on hand, and while there has been the usual buying in small lots, no large transactions have yet been recorded. This applies, of course, to Iron for the second and third quarters. There is a continual demand for small lots of various grades for immediate delivery, but no fancy prices are either asked or paid under such circumstances. All quotations remain at the same nominal figures as last quoted.

Finished Material.—There has been manifest during the past week a much better feeling than has prevailed for some time past. Almost the only business which has appeared during the week was an inquiry for 5000 tons of Sheet Bars and a contract for some Structural Material for building purposes. The Rail market continues extremely quiet. A livening up in all grades is anticipated within a short time now.

Old Material.—Like everything else, Scrap has been affected by the stagnant conditions which have prevailed since the first of the year, and some sales have been made at a shade lower figures than those last quoted. The supply continues fully equal to the demand, but not much ahead of it in the matter of volume.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, January 24, 1900.

Pig Iron.—The local market has been quiet, only small inquiries having come to hand. There has been more interest lately on the part of foreign buyers, and one small lot has been sold for delivery to Manchester, England. Prices abroad are now closer to our parity, and the uncertain feature is freights. With low rates some business can be put through. Prices are as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, $24 to $25; No. 2 X, $22.50 to $22.75; No. 2 Plain, $21.50 to $22, and Gray Forge, $18.50 to $19.25. Southern brands are quotel: No. 1 Foundry, $22.75 to $23; No. 2 Foundry, $21.75 to $22; No. 1 Soft, $22.50 to $22.75; No. 2 Soft, $21.50 to $22; No. 3 Foundry, $21.50 to $21.75, and Gray Forge, $19.25 to $20.25.

Cast Iron Pipe.—A little more demand is developing, and a moderate amount of business is being placed. However, in this territory the consolidation and the outside interests are watching one another closely. To-day an order for about 3000 tons is to be awarded at Boston. We quote $29.50 to $30 for 8-inch Pipe, tidewater.

Steel Rails.—The market continues quiet with $35 at Eastern mill as the price for Standard Sections. We continue to quote Angle Bars 2.35c. to 2.50c., and Spikes, 2.65c. to 2.75c.

Finished Iron and Steel.—The event of the week has been the closing of the contract for 13,000 tons of Bridges for the New York Central Road, the work being divided between a Philadelphia, a Central Pennsylvania and a Detroit plant. Another large contract for Bridge material now in the market is that for a West Virginia road. In Structural Material for local buildings nothing of consequence has developed. A Jersey City hotel, which has hung fire for some time, will now be closed. It calls for about 1000 tons. Some large buildings are coming up, among them being one for a realty company, involving about 10,000 tons. Plates are weak. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels,2.40c. to 2.50c.; Steel Plates are 2.45c. to 2.60c. for Tank, 2.65c. to 2.75c. for Shell, 3c. to 3.10c. for Flange, 3.15c. to 3.30c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3c. for C. H. No. 1, 3.50c. for Flange, and 4c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 2c. to 2.10c., on dock. Soft Steel Bars, 2.35c. to 2.45c.; Hoops, 2.70c. to 2.75c., base, delivered.

Merchant Pipe.—Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered, and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent.; Inserted Joint, 32½ per cent.; for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and for less than carload lots, f.o.b. mill. On Boiler Tubes, 1¾ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes, 2¾-inch and larger, 55 per cent. on Steel, and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, January 24, 1900.

Pig Tin.—Since our last writing the market has advanced quite sharply for spot Tin, but it soon reached its hight and straightway tumbled back again. It is still falling, and at the present writing the market is easy and dull, with spot quoted nominally at 27½c. This price could, however, be shaded if there were any firm bids on hand. January delivery is quoted 26½c. to 27c., while February prices range between 25⅞c. and 26½c. The London market fluctuated in its usual way and closed to-day £120 10s. for spot and £117 10s. for futures. The spot price is exactly £3 higher than it was last week, but it will be noticed that the discount on futures amounts to £3 per ton. The Dutch Trading Company announced that they will hold their first Banca sale for this year on Wednesday next. They announce that they will sell 53,000 Slabs, which is an increase of 7000 Slabs over the last sale. The steamship "Indiana," which has been delayed at Lisbon so long, has arrived at last with between 600 and 800 tons of Tin aboard. At Lisbon she had a new shaft put in. Her consignment consists of the very highest priced Tin, having cost not less than £148 sterling. In view of present prices this is a considerable loss to the consignees.

Copper.—Official figures remain absolutely unchanged, with 16½c. for Lake, 16¼c. for Electrolytic, and

16½c. for Casting. It is said, however, that Electrolytic and Casting Copper can be had in small quantities for 16c. The producers and merchants announce an active demand and report good sales to large consumers. Advance shipments of the large block recently sold by the large Lake Company, it is said, are being made now. London was a little more active and closed to-day £71 5s. for spot and £70 15s. for three months' futures. Best Selected has declined 15 shillings and comes to-day £75 15s.

Pig Lead.—There is no change whatever either as to price or tone of the market. The American Smelting & Refining Company are quoting 4.70c. to 4.75c. for spot and futures. This is also the price generally accepted in the trade. The London market is somewhat lower, with closing cables to-day at £16 2s. 6d. for Soft Spanish.

Spelter — Has advanced quite sharply here as well as in London. Prices quoted here for spot and nearby delivery are 4.70c. to 4.80c., with sales made at 4.75c. London is quoted £22 2s. 6d. There is no change in the Ore market.

Antimony— Is without change, with Hallett's selling at 9¾c. and Cookson's 10½c. to 11c.

Nickel.— Very scarce, with a good demand. Price unchanged at 38c.

Quicksilver.— Wholesale lots of 100 flasks and over are quoted $51 per flask of 76½ lbs. The London market remains unchanged at £9 12s. 6d. for Rothschild's and £9 11s. 3d. for second hand.

Tin Plate.—Demand is said to be very brisk. Prices are unchanged, the American Tin Plate Company quoting on a basis of $4.84 per box of standard 100-lb. Cokes, f.o.b. New York, or $4.65, f.o.b. mill.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,
New York, January 24, 1900.

There is a decided improvement manifest in the tone of the market. Machinery merchants report an increasing volume of actual business, and inquiries are said to be much more numerous than they were at any time this year. It is also said that the inquiries are of an excellent nature. They indicate that not only are old projects really getting down to focus, but that new enterprises are being launched which will require complete equipments. While, of course, it is still impossible to obtain immediate delivery on most lines of machinery, the temporary lull of the last month or so did much in easing up the pressure which bore upon manufacturers and the present business is being snapped up much more eagerly than it would have been but a short time ago. A busy and hustling atmosphere seems to have once more spread over the machinery section. This is especially noticeable in engine and boiler quarters. Representatives of power generating machinery state that they have been most agreeably surprised by the amount of new work which commenced with this week. Doubtless the greatest activity in this line emanates from the New England States, the equipment being for electric lighting and street railway purposes. A notable increase in orders is coming from the mills in that section. This demand is chiefly for engines and boilers to be used supplementary to the existing water power plants, which are becoming remarkably inefficient on account of the low water in the streams occasioned by the drought.

New automobile plants seem to be taking up a large portion of the machine tools which are being purchased. Mining machinery and hoisting and conveying machinery are in considerable demand, such equipment which is sold in this territory being largely due to the rehabilitation of the New Jersey and Southern iron properties. The shipyards are still an important factor in the machinery market also. We hear that the Gruson Iron Works have ordered the bulk of their equipment for their new Eddystone, Pa., plant. The transactions were negotiated through their Philadelphia office.

A mild sensation was created in the street yesterday by a rumor that the Navy Department are soon to purchase upward of $1,000,000 worth of machinery and tools. In connection with the rumor it is stated that the machinery will be distributed among the various navy yards throughout the country. The representative of a large Western company who has had extensive dealings with the Government stated that this amount of money could very easily be expended by the Nevy Department, and that after the machinery was installed at the various yards they would be none too good to handle the work which they are intended to cope with. He said: "During the last few years in which such great strides have been made in building up of the American Navy, the various navy yards have practically stood still. They have not grown with the navy. A few years ago it was difficult to get any kind of a 'navy bill' passed by Congress. Since the Spanish-American War the situation has changed. During the war our navy showed its worth so well that Congress appropriated more than $50,000,000 for its support. The war made our navy a popular ideal. So much was said about it by the press that almost every man, woman and child became interested in naval matters. People who never knew the difference between a battle ship and a torpedo boat, not only learned the difference between the various classes of our ships but learned their names and learned to appreciate the value of a strong navy. People living near the navy yards or wherever the ships were stationed flocked to see them. And why do the authorities allow the public to inspect the ships? Why do they take any one who desires over them and show them the big guns and mechanism and how well they are kept? Simply to foster this popular appreciation for the navy. With the people at large favoring the constant improvement and betterment of our navy, Congress must listen to the appeals of the chiefs of the various bureaus when they point out their necessities and ask for the necessary funds to obtain them. This is a great country and we cannot afford to fall behind in naval and military matters. We are now building up a great navy. In this matter Congress has listened to the people. There was a time when Commander So and So was appointed chief of a department at a navy yard, and all he had to do was to look nice and ask for things. Congress in turn promptly refused to give him anything because his requests were simply a matter of form and were taken simply as an evidence that he was still alive. In these days things are changed. We have the ships now and actually need well equipped yards for their maintenance. Why, there are only about three navy yards in the country that have a promise to have anything like their necessary equipment, and they are far behind. Take Brooklyn, for instance, which is one of the three. They haven't a crane of more than 50 tons capacity. Suppose we were led into a war to-day, and some of our big ships should get seriously disabled. Not a navy yard in the country could handle those ships properly. Of course they have the big private shipyards to fall back on, but that is not the proper safeguard for a big country like this to fall back on. Yes, I think that just as Congress are favoring our navy with necessary ships so they will aid it with the necessary navy yards, dry docks and coaling stations. We are now getting right near the top as to the strength of our ships; well, just so we shall advance in the care of our ships. Take as example the new coaling stations, of which the one at New London has just been completed. That station is the greatest plant for coaling vessels in existence. In the matter of dry docks we are also pretty well on toward fulfilling the requirements. The great floating dry dock now in course of construction at New Orleans will cost $1,000,000, and I understand that Chief Melville is much in favor of putting up the necessary machine shop, &c., for the establishing of a naval station at that point. At the Brooklyn Yard they are being cramped for room, and I understand that there is a project on foot for spending $10,000,000 for cribbing in Wallabout channel, forming a basin for big docks and connecting that island with the main yard. Chief Engineer Smith is also likely to bring his salt water fire system into effect soon. Oh, yes, I think that the next ten years will bring our navy yards up to a point of efficiency unequaled anywhere in the world. A million dollars' worth of machine tools? Why, yes, I take a good deal of stock in that rumor. I think it is very plausible that the Navy Department contemplate installing that amount of machinery in the various yards. They can do it with great benefit resulting to the country, and even then there will be room for much more improvement. The Navy and War departments will, without doubt, prove excellent customers during the next four years. Watch the navy."

Extensive orders for machine tools have been placed in this market by the American Electric Vehicle Company of Hoboken. This company are equipping a large plant and we understand that they have very recently figured among the best customers of the machinery section. They have acquired the old Hoboken Silk Mill on Clinton street, a few blocks beyond the Lackawanna ferry house.

A short distance from this plant, at 113 Adams street, is located the new shop of the Perfect Compound Kerosene, Gas and Compressed Air Automobile Fire Engine & Motor Mfg. Company. This concern have also purchased a considerable quantity of machine tools for their new plant. Mr. Kuenzel is in charge.

The Goodson Graphotype Company, builders of typesetting machines, are equipping a plant in the Cushing Building, Morris street, Jersey City, and placed a large order for machine tools with Manning, Maxwell & Moore last week.

E. V. Hotchkiss, manager of the Brussels department of Adolphe Janssens, Paris, France, who is, as we have

previously stated, in this country, is now canvassing the New England district, buying machine tools.

A good portion of the machinery which Mr. Hotchkiss is purchasing here will be erected and displayed at Antwerp, where Mr. Janssens is opening a large warehouse. Some of the machinery will be electrically driven and exhibited in operation. The exhibit will be under the supervision of American mechanics who will be secured in this country by Mr. Hotchkiss. It is proposed to carry at least $200,000 worth of machine tools in stock at the Antwerp house. Mr. Hotchkiss will also place orders for many thousands of dollars worth of machinery and equipment for fitting out a locomotive plant which will be built at Marcinelles, near Charleroi, Belgium.. The plant, it is said, will be erected by the Belgian Government, and will have an annual capacity of 100 locomotives. Among the other equipment which Mr. Hotchkiss will purchase is the balance of the outfit for the Lille engine plant. It will be recalled that Mr. Janssens purchased the bulk of this material when here a few months ago. This plant will produce the Rice-Sargent engines in France. Mr. Hotchkiss is stopping at the Hotel Imperial, New York.

Among the orders of last week which the New York Air Compressor Company of 120 Liberty street received was one for four compressors of 1200 cubic feet capacity each from the Pennsylvania Railroad and one for railroad shops which are being built in Japan. The Pennsylvania Railroad will utilize the compressors in their signal service.

The Central Brewing Company, who are building a new plant at Sixty-eighth street and East River, have awarded to F. H. Gottlieb of 133 Liberty street a contract for all piping, valves, steam and water fittings and coal elevating and conveying machinery. The architects and contractors for this work are the Wm. Griesser Construction Company of 11 Broadway, who are also building breweries at Stroudsburg and Hackettstown, Pa. Mr. Gottlieb has secured the New York agency for the Nelson Valve Company of Wyndmoor, Pa.

The Hancock Inspirator Company, manufacturers of the Hancock inspirator, the Loftus automatic injector, ejectors and general jet apparatus, have moved their general office and salesrooms from Boston, Mass., to 85, 87 and 89 Liberty street, New York City.

OBITUARY.

THOMAS HOLLAND.

Thomas Holland, a leading iron man of Portsmouth, Ohio, died in Birmingham, England, January 13, aged 48 years. He had been in England for two years, and was preparing to return home when stricken with heart disease.

GEORGE T. LEWIS.

George Thompson Lewis of the firm of George T. Lewis & Sons died January 16, at his home in Philadelphia at the age of 73 years. He took an active part in the reorganization of the old Lehigh Zinc Company, the founding and development of the Charleston Mining & Mfg. Company, and the establishment of the Picher Lead Company of Joplin, Mo. Mr. Lewis invented and introduced a number of important commercial processes, including the recovery and refining of cotton seed oil and the introduction of caustic soda. He was intimately interested in the importation of kryolite from Greenland, and the production therefrom of various commercial articles.

HENRY WATTS MERCHANT.

The large circle of friends of the late Henry Watts Merchant, secretary and treasurer of the firm of Merchant & Co., Incorporated, of Philadelphia, heard with the deepest regret that his death occurred in Phœnix, Ariz., on January 8, being taken off in his prime. Mr. Merchant enjoyed a large circle of warm friends in Philadelphia and elsewhere and the business community of that city has lost one of its brightest and most affable young men. Because of his close application to his business duties, his health had become seriously impaired and he left in September last for a rest and change, and the reports from him had been exceedingly encouraging and his sudden death in consequence was a great shock. Mr. Merchant had, since his early boyhood days, been associated with his father in business. He was beloved by his business acquaintances and his high standard of integrity and honor were the traits of his character which will remain in the minds of his many business associates. Mr. Mercaant built the tin plate works of the firm, and had its entire management.

LEM F. HAUBTMAN.

Lem F. Haubtman, a leading manufacturer of sugar mill machinery, and a member of the firm of Haubtman & Loeb, of New Orleans, La., died recently in that city at the age of 53 years. Mr. Haubtman enjoyed a national reputation in his particular line, and designed and built nearly every large sugar mill in Louisiana and Texas.

ROBERT BADEN.

Robert Baden, proprietor of the Bonham Iron Foundry, Bonham, Texas, died on January 2 as the result of being accidentally struck by a piece of timber.

JOHN I. WHITE.

John I. White, for many years secretary of the Bass Foundry and Machine Works, Fort Wayne, Ind., died on January 14, aged 58 years. He was born in Batavia, N. Y., and served in the Civil War as adjutant of the One Hundred and Fifth New York Volunteers, being wounded at the battle of Fredericksburg. In 1867 he became identified with the Bass Works as salesman, subsequently being appointed to the office of secretary, with charge of the car wheel department of the business.

England's Exports and Imports of Iron and Metals.

The official returns have just been received of England's exports and imports. The latter include in 1899 7,055,178 tons of iron ore, as compared with 5,468,396 tons in 1898; 6,186,022 and 4,684,333 tons, respectively, coming from Spain. Of pig iron and puddled iron the imports rose from 159,523 tons in 1898 to 171,416 tons in 1899, Sweden contributing thereto 60,759 and 66,706 tons, while the United States forwarded 76,356 tons and 80,988 tons. Of course the Swedish material is chiefly crucible steel stock, the value in 1899 having been £328,741. Of bar, angle, bolt and rod iron the imports were 69,224 tons in 1898 and 17,156 tons in 1899. The imports of "steel unwrought" rose from 40,231 tons to 77,290 tons, this of course being billets, &c. The importation of beams shows a decline from 103,439 gross tons in 1898 to 95,476 tons in 1899, English manufacturers having more seriously taken up this line, which, curiously, they neglected for so many decades. The imports of girders and axles were 2145 tons in 1898 and 2433 tons in 1899, while the tonnage of "unenumerated iron and steel manufactures" was 216,868 tons and 225,260 gross tons respectively, the valuations being £2,969,067 and £3,274,820. The English imports of machinery increased from £2,745,884 to £3,406,699 in 1899.

Altogether, the English imports of raw materials and of manufactures of iron and steel footed up to £12,702,976, or over $61,000,000, in 1898, and to £14,921,682, or over $72,000,000, in 1899.

The following table summarizes the exports of iron and metals and the manufactures thereof:

Exports of Iron and Metals and Manufactures Thereof from Great Britain.

	Quantities. Gross tons		Values. Pounds sterling.	
	1898.	1899.	1898.	1899.
Brass, manufactures of	5,294	5,706	471,234	563,167
Copper, ingots, &c.	26,662	31,938	1,430,153	2,398,860
Copper, manufactures of	13,579	11,054	861,563	912,518
Yellow metal	10,222	6,927	505,024	437,388
Hardware	.....	.....	1,430,358	1,536,910
Cutlery	.....	.....	556,334	603,326
Implements and tools	.....	.....	1,314,676	1,429,700
Pig iron	1,042,853	1,379,296	2,739,093	4,784,357
Bar, angle and rod	150,119	159,133	993,973	1,227,336
Rails	476,047	472,672	2,173,665	2,313,891
Chairs and sleepers	73,048	61,060	311,207	312,489
Unenumerated railroad material	60,308	58,065	526,773	504,132
Wire, and manufactures	44,123	49,253	772,604	888,201
Hoops, sheets and plates	101,292	110,013	779,181	932,380
Galvanized sheets	226,496	238,353	2,582,376	3,121,410
Tin plates	250,953	256,629	2,744,077	3,167,683
Cast, wrought and all others not enumerated	355,662	358,125	4,732,459	5,232,098
Old iron and steel for remanufacture	84,802	116,400	238,561	390,524
Steel, unwrought	285,249	328,580	2,640,186	3,368,462
Black plates for tinning	58,327	85,567	541,886	827,958
Manufactures of steel or steel and iron combined	35,071	44,470	904,231	1,021,859
Lead and manufactures	38,075	40,281	545,354	635,630
Plate and plated ware	.....	.....	427,443	423,228
Telegraph wire and apparatus	.....	.....	985,283	1,407,783
Tin, unwrought	5,467	4,709	391,898	587,531
Spelter, and manufactures	8,665	6,707	157,512	154,392
Other metal articles	.....	.....	1,036,687	1,129,220
Locomotive engines	.....	.....	1,483,600	1,468,467
Agricultural engines	.....	.....	687,934	764,471
Other steam engines	.....	.....	1,454,928	1,642,675
Agricultural machinery	.....	.....	850,236	944,480
Sewing machines	.....	.....	1,083,481	1,292,033
Mining machinery	.....	.....	716,377	735,092
Textile machinery	.....	.....	6,628,012	6,819,598
Other machinery	.....	.....	5,485,405	5,984,064

These, it will be observed, are very large figures, the articles enumerated as iron and steel, exclusive of machinery, figuring up £22,630,272 in 1898, and £28,092,780 in 1899, or over $135,000,000. In the case of some of the metals the exports are not of English origin, but merely

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JANUARY 24, 1900.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
$29,000,000	Am. Car & Foundry, Common..	818	.....	-13	-12¾	-13	.....	-13
29,000,000	Am. Car & F'y, Pref.(7% Non-Cu.)	932	.....	.....	.....	60 -60¼	60¼-60¼	-60
19,000,000	Am. Steel Hoop, Common.....	400	.....	.....	-42	-42	-42¼	-42
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.).	535	81 -81¼	.....	.....	-81	-80	.....
50,000,000	Am. S. & W., Common.....	35,440	46⅝-47¼	46⅞-48⅛	48⅛-48⅝	48 -48⅜	46¾-48	46¼-49¼
40,000,000	Am. S. & W., Pref. (7 % Cu.)....	1,860	.....	-90	90 -90⅛	-90⅛	90⅛-90¼	90⅛-91
28,000,000	Am. Tin Plate, Common, N. Y..	1,150	29⅛-30	29 -29⅝	.....	29⅛-29¾	....	-29
18,000,000	Am. Tin Plate, Pref., N.Y.(7% Cu.)	110	.....	-81¼	.....	.....	.....	.....
7,500,000	Bethlehem Iron†	255	.....	.....	.....	-58	-58	-58
15,000,000	Beth. Steel, Par $50, $1 paid in.	15	.....	-18	.....	.....	.....	.....
7,974,550	Cambria Iron, Phila*.....	851	-45½	-45½	.....	.....	45 -45¼	.....
16,000,000	Cambria Steel**.....	1,550	21¼-21⅝	....	21⅝-21⅞	21⅝-21⅞	21¾-21⅞	-21¾
11,000,000	Col. Fuel and Iron.....	5,995	43 -44⅝	43 -44	43 -43¼	43 -43¼	41⅛-43	43 -42¾
46,484,300	Federal Steel, Common.....	21,210	50⅛-50¾	50¼-51¾	51¼-51⅝	51¼-52	50 -51⅝	50⅛-51⅛
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	2,028	-73	73 -74	73⅝-74¼	-74	.....	.....
32,000,000	National Steel, Common, N. Y..	2,935	.....	42 -42⅝	-42⅛	42 -42¼	41⅛-42	41⅜-41⅝
27,000,000	Nat'l Steel, Pref., N. Y. (7 % Cu.)	1,310	.....	-92⅛	.....	92 -92⅛	92¼-92¾	-92⅛
5,000,000	Penna., Common, Phila.....	.....	.....	.....	.....	.....	....	78 -80¼
1,500,000	Penna., Pref., Phila.....	60	.....	.....	.....	.....	.....	-90
12,500,000	Pressed Steel, Common.....	1,483	.....	56¾-57¼	.....	-56¼	56¾-56¾	.....
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	1,060	.....	88 -88¾	87¼-88	-87⅛	.....	87⅞-88
27,352,000	Republic Iron & Steel, Common.	4,761	20¼-20⅜	20¼-20¾	-21	21 -21¼	20¾-21⅜	20¼-21¾
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	1,625	64¾-65	.....	-65	65¾-68	.....	.....
20,000,000	Tennessee Coal and Iron.....	5,640	-84¼	84¾-86¼	85¼-86¼	85 -86	84 -84¾	84 -84½
1,500,000	Warwick Iron & Steel (par $10)	2,635	10⅜-10⅝	10⅜-10½	-10⅝	10½-10⅝	-10½	-10¼

* Par $50. ** $1.50 per share paid in. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., $130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $13,200,000 Illinois 5 %, $7,417,000 R. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 % Steelton 1st 1917, $2,000,000 5 % Sparrow's Point 1st 1922, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.: Col. Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort. 6 % $2,810,000, Col. Fuel & Iron Gen. Mort. 5 % $2,303,000. Also outstanding $2,000,000 preferred stock with accumulated dividends of $640,000 to June 30, 1899.

represent the transshipment trade. This to a limited extent may be true also of some of the iron and steel goods.

In a number of the articles details are given concerning the destination of the shipments. For 1898 and 1899 the United States figures in the returns for £20,741 and £39,593 of hardware, £65,239 and £82,514 of cutlery, 20,086 tons and 35,744 tons of pig iron, 2541 and 4454 tons of bars, angles, bolts and rods, 65,338 tons and 63,047 tons of tin plates, 12,046 tons and 16,689 tons of unwrought steel, 9739 tons and 14,131 tons of black plates, £286,998 and £365,424 of textile machinery, and £56,263 and £79,905 of other machinery in 1898 and 1899, respectively.

Iron and Industrial Stocks.

During the week under review there has been little interest in steel stocks, and sales in quite a number of issues have been light. Fluctuations have kept within a narrow range. For the present interest centers in the forthcoming meeting of the directors of the American Steel & Wire Company next week, the report being that a dividend on the common stock may be declared.

There has been renewed talk of a fusion of the Moore properties, the National Steel Company, the American Steel Hoop Company and the American Tin Plate Company. The relations of these concerns have been very close, the National Steel Company furnishing practically all of the steel for the Tin Plate Company and a considerable part of that required by the hoop company. The fusion would be advantageous to all, and would remove a possible source of friction. The financial strength of an amalgamated company would be exceptional.

	Bid.	Asked.
American Bicycle Company, Common	14	17
American Bicycle Company, Preferred	44	50
American Bicycle Company, Bonds	..	92½
E. W. Bliss, Common	132	150
E. W. Bliss, Preferred	125	..
Cramp's Shipyard Stock	80	84
Diamond State Steel	5⅝	5¾
International Silver, Common	9	10
International Pump, Common	16	17
International Pump, Preferred	62½	63½
National Tube, Common	43	44
National Tube, Preferred	92½	94
Otis Elevator, Common	22	25
Otis Elevator, Preferred	86	89
Pratt & Whitney, Common	3½	5
Pratt & Whitney, Preferred	46	54
U. S. Projectile	95	105
Sloss & Sheffield Steel & Iron, Common	28	31
Sloss & Sheffield Steel & Iron, Preferred	68	69
Tidewater Steel	15⅝	15½
U. S. Cast Iron Pipe Company, Common	8	9
U. S. Cast Iron Pipe Company, Preferred	41	44
H. R. Worthington, Preferred	98	99

The Pennsylvania Furnace Company have declared a quarterly dividend of 1½ per cent., payable February 5. The stock is $3,000,000, of which $675,000 is in the treasury to pay for a new stack.

The Warwick Iron & Steel Company have declared a dividend of 2 per cent. and an extra dividend of ½ per cent., payable February 10 to stock of record January 27.

The Alabama Consolidated Coal & Iron Company have declared a dividend of 1¾ per cent. on the preferred stock, payable February 1.

The Colorado Fuel & Iron Company have declared a dividend of 8 per cent. on their preferred stock for the year ending June 30, 1896, such dividend to be payable February 15, 1900, in cash, to the stockholders of record of January 26, 1900. Books closed from January 26 to February 15. The directors adopted a resolution declaring that they indorse the policy of continuing the declaration of dividends upon the preferred stock at short intervals as the earnings of the company warrant, until all the arrears have been paid in cash.

At the annual meeting of the Empire Steel & Iron Company held in Jersey City, N. J., January 23, the stockholders authorized the directors, in their discretion, to take steps to double the capital stock, making it $10,000,000. The directors elected were Archer Brown, Leonard Peckitt, E. R. Chapman, E. K. Sumerwell, F. M. Jeffery, F. M. Davis, Glen Wright, W. L. Sims, and W. E. Scarrett. Leonard Peckitt is president, W. L. Sims general manager and treasurer, and Glen Wright secretary.

The December statement of the Tennessee Coal, Iron & Railroad Company is as follows:

	1899.	1898.	Changes.	
Net earnings	$302,140	$74 525	Increase,	$227,615
Fixed charges	45,563	47,479	Decrease,	916
Surplus	$255,577	$27,046	Increase,	$228,531
For Year:				
Net	$1,863.546	$792,900	Increase,	$1,070,646
Fixed charges	558,756	570,045	Decrease,	11,289
Surplus	$1,314,378	$222,855	Increase,	$1,091,523

The stockholders of the Sharon Steel Company, Sharon, Pa., have voted to increase the company's capital stock from $3,000,000 to $4,000,000.

The capital stock of the Pittsburgh Steel Hoop Company of Pittsburgh, with works at Glassport, Pa., has been increased to $300,000 paid up. The plant of this concern, which is modern, will be in operation early in February. The product will consist of a full line of hoops and bands.

The Eastern Bridge & Structural Company, Worcester, Mass., have been incorporated with a capital stock of $75,000. The incorporators are Albert H. Inman, A. S. Miller, Jr., William H. Inman, James C. Stewart, and others. The stated purpose of the company is to manufacture, buy and sell all kinds of metallic structural work.

A. Leschen & Sons Rope Company of St. Louis have opened a Chicago office at 47 and 49 South Canal street. They manufacture flattened strand and Hercules wire rope.

The Cincinnati Machinery Market.

Office of *The Iron Age*, Pickering Building,
CINCINNATI, OHIO, January 20, 1900.

The first month of the new year has shown but little if any loss of activity in machinery circles. Whatever may be the private opinions of those with long established interests as to the probable duration of the present prosperity there is nothing visible in the situation to keep newcomers from entering the field or stop the carrying out of plans laid last year for expansion of existing capacity. The past few weeks have been very fruitful in new business, though at the same time devoid of what might be termed news in regular trade lines. The out of the ordinary happenings of a year ago have grown so commonplace as to be unworthy of notice except as they contribute to swell the general totals as represented by individual order books.

Nevertheless there have been a few happenings worthy of record which in themselves serve to show the general trend of affairs. Among them is the fact that Cincinnati is to have a new lathe making establishment, and judging from the indications it is to be an enterprise of no mean proportions. The venture is to be known as the Belmer-Eames Machine Tool Company, taking their name from the two men who are behind it. H. Belmer is a Cincinnatian, who for many years has been at the head of the Cincinnati Barb Wire Fence Company, but now that that concern have gone into the hands of the consolidation he is thus putting his money and abilities into this new business. G. T. Eames comes from Kalamazoo, Mich., where he has been engaged in the manufacture of the Yankee twist drill. They have bought a large building in North Fairmount, a few blocks north of the old barb wire plant, from McCassy Bros. This building has been occupied as a wood working establishment until very recently and is well equipped with power plant. It is a comparatively new building and large enough to give employment to 150 hands if completely fitted up as a lathe factory. The company are now moving in their tools and expect to be in running order before the expiration of the next four weeks. They have purchased the entire equipment of the Ames Mfg. Company of Chippewa Falls, Wis., and are now shipping it to the new plant.

The most important event in the way of new beginnings was the starting of the plant belonging to the Dietz Machine Tool Company. The building occupied by this company is erected a few yards to the south of the Lodge & Shipley shops. It is 60 x 190 feet in size and two stories in hight. The Dietz Company will occupy the ground floor with a force of about 40 hands and will devote their energies exclusively to the production of the Lodge & Shipley 30-inch lathe. In fact, the plant may be justly regarded as an addition to the Lodge & Shipley shops. Among the new tools which have been set up in the shop are a Gray 48 x 42 planer, with 50-foot bed and 30-foot table. Also a 5 foot radial from the W. E. Gang Company's shops. The intention is to turn out about 12 lathes per month.

The Fosdick-Holloway Machine Tool Company are now very thoroughly established in their new quarters and are enjoying a very fine run of business chiefly turned their way through the efforts of J. K. Holloway in his recent European trip, from which he returned about the last of December. The company have now sufficient foreign orders on their books to keep them running for some months, and they are in addition finding domestic trade all that could be desired. They are making drills in lots of 50, one half of which are 2½ feet and the other 3½ feet. When the correspondent of *The Iron Age* was in the shops a few days ago a lot of 25 3½-foot post radial drills were just ready for export shipment. They have completed arrangements for the making of 5-foot drills and are now at work on their first tools of this size. The system on which their shops are run is to start the raw materials at the north end of their main building and push them south as they progress, until they are ready for the truckman at the southern entrance. They have now found that when their machines are all assembled and ready for belting they are usually 50 to 70 feet from the nearest point in their shop where they can be belted up and tested. This necessitates the labor and expense of carrying the tool back to the nearest pulley. In order to avoid this trouble they are to put in at once an electric motor mounted on a movable truck, which can be taken direct to any machine to be tested, and this work done on the exact spot where the machine happens to stand when it is completed. As a proof of the state of their order book they are now working 90 men on day shift and 20 on night turn, operating all of the larger machines.

Schumacher & Boye are working 165 men and report no perceptible falling off in their trade. There is a specially good demand for the largest sizes of their double spindle lathes. An important improvement to their shops is the putting in of a hot air heating plant by the American Blower Company. All of the stoves which were in use last winter have now been removed.

The Cincinnati Planer Company say that while their trade is keeping up remarkably well yet the competition this year bids fair to be much stronger than it was in 1899. They are now building about three planers per week and making three sizes only, 30, 33 and 36 inch. In foreign quarters Italy seems to be noticeable as showing up an opening market for American tools. The company are at work on a planer which they will ship to the Paris Exposition some time next month.

The Lane & Bodley Company are now at work on what will be one of the largest engines ever built in this city. It is to be an air compressor. The size of the steam cylinders will be 20 and 38 x 48 and the air cylinders 20 and 34 x 48. When complete it will weigh about 100 tons. It is to go to a mining company at Kimberley, South Africa. It will be of about 1200 horse-power. The third engine of an order from the Indiana gas fields is now just ready for shipment. It is a gas compressor with steam cylinders 30 and 48 x 48 and gas cylinders 16 and 16 x 48. It is 1000 horse-power and weighs not far from 200,000 pounds. The company are well sold ahead and at this time have not a single engine in process which has not been sold. A recent order was for a 1000 horse-power engine for a paper manufacturing company at Shanghai, with four cylinders, 16, 26, 28 and 28 inch, all 42-inch stroke. They have also an order for two compound engines, each 300 horse-power, for the De La Mar mines at Mercur, Utah.

The Laidlaw-Dunn-Gordon plant, which has always been considered by fire underwriters as a first-class risk, with all the parts except the one-story machine shop equipped with automatic sprinklers, is to be further improved by the extension of the sprinkler system to the entire plant. The work is now well under way and is costing the company about $6000. While there is a fine demand for big air compressors and the usual line of pumping machinery the feature of the year, according to Superintendent Walter Laidlaw, is the extraordinary activity in the call for tobacco machinery. Prior to a date some six months ago this branch of business had been quite dull for quite a season, but now the demand has increased so much as to take about 30 per cent. of the capacity of their plant. Shipments are being made to tobacco manufacturing concerns all over the world and show a decided growth in that line in many countries which were not formerly noted as users of plug tobacco.

The Isaac Joseph Iron Company have been buying quite a lot of scrap iron in Cuba and shipping it to this country. Among their recent purchases was a lot of 40 old locomotives, which recently arrived at Newport News on the bark "Louise Adelaide."

Gustav Diechmann, a very prominent machine tool factor of Berlin, spent about ten days in this city within this month. He was here on business and became quite well acquainted in machine tool circles, and as evidence of his appreciation of the product of Cincinnati shops left his name on more than one order book.

One of the most talked of episodes in machinery circles of the past month was the act of the Lane & Bodley Company in throwing up their contract for the pumping engines for the new water works of this city. Mention was made of this fact in a recent number of *The Iron Age*. Sentiment as to the merits of the case is divided and the blame is being laid freely at the doors of both the company and of the Water Works Commission and their engineers in charge of the work. Lane & Bodley's side of the affair is about as follows: The Water Works Commission approved their bid and signed their contracts on January 4, 1898. At the time of this signing the company had purchased sufficient material to carry them well through with the work, but owing to the long delay to which they were put by reason of the actions and inaction of the commission they used this material, consisting chiefly of 2000 tons of pig iron, in other work, and now to fill this contract they would have to purchase more material at an advance of 100 per cent. The engineers have changed and rechanged the original plans until they now amount to a contract widely different from the one which was signed two years ago. The Lane & Bodley Company also claim that by reason of the actions of the commission they have been put to large expense and a great amount of labor, and in addition to declining to fill the contract it is their intention to bring suit against the city of Cincinnati for the damages they have sustained thereby. They make the claim that the specifications have been changed from time to time, until now there is but one concern in the United States who could fill the contract in its present shape. Of course the commission is not without reasons for the upholding of its side of the controversy and asserts that it will at once proceed against the Lane & Bodley Company and their bondsmen for the loss sustained to the city by reason of the company's action. The contract was secured by a bonding company for $200,000. A conservative estimate of the amount the city will have to pay above the original figures, $520,000,

for the work taken under any bid they might get now would be $250,000. There is a great deal of dissatisfacion in the city because the commission did not contract for the piping and other portions of the work when materials were so much lower than they are now, and much political capital is being made by reason of the whole affair.

The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., January 22, 1900.

The first month of the new year finds the general situation in the machinery trade in a very satisfactory condition when the unfavorable influences which have intervened during the past few weeks are taken into consideration. But it is believed that these have about exhausted themselves and will soon give place to renewed activity. The last month of the year is usually a period of inaction, and when there have been (as in this case) some entirely unforeseen developments, a slack up in business creates no surprise. While some few concerns report a light demand, the majority of manufacturers appear to have a good share of work on hand. Prices of raw materials still rule high, and many manufacturers complain that even at the prices asked such material is in some instances difficult to secure.

Raw materials have advanced in price within a year anywhere from 20 per cent. to 100 per cent., labor from 10 per cent. to 25 per cent., and keeping in unison with the general advance in prices coal has gone up about 20 per cent. The advance in this latter commodity is due not so much to a shortage at the mines as to the inability of the railroads to supply cars.

It is claimed by manufacturers who are compelled to use leather in connection with their business that since the advent of the Leather Trust the price has steadily advanced until at present it is fully 100 per cent higher than before the formation of the trust.

Taking into consideration the war in Africa, with its unexpected developments, which have been inimical to business activity, together with the extraordinary stringency in money both here and in the financial centers of Europe, it is surprising how well business has been sustained.

However, prospects are improving, and there is a disposition to believe that the worst effects have been felt, and that an active revival in the demand for tools and machinery is one of the probabilities of the near future.

George V. Cresson Company state they are extremely busy, having practically about all they can do. This month's shipments include a lot of rock crushing machinery to Mexico, and also to several Lehigh Valley cement plants. The demand for their ordinary products is very strong.

The Stow Flexible Shaft Company are kept busy on orders for their electric portable drills and pneumatic drills, while orders for their ordinary manufacturings keep along in good condition. The demand for their railroad repair shop tools is growing to a considerable extent.

Afred Box & Co. report a brisk demand for their traveling cranes, including hand, steam and electric power, the latter type being in great demand, particularly for those of the larger capacities—ranging up to 40 tons. The recent completion of a new building for this firm will add greatly to their present facilities for larger work, and already active work in this direction is now under way. They also report an increasing demand for their portable chain hoists, quite a considerable export trade being done in this line.

The Bement, Miles & Co. plant of the Niles-Pond-Bement Company are running their shops to the fullest capacity and have work enough on hand to employ them for a long time to come. Their shipments to Europe continue to be on a large scale, and include boring machines, lathes, hydraulic riveters, flanging machines, &c. There is a fair inquiry for additional work, but the sales during the past three or four weeks have not been as large as they were during the fall months of last year. This, however, considering the holiday season and the unsettled condition of the money market both at home and abroad, is only what might have been expected.

Dieneit & Eisenhardt are running full time with more hands employed than ever before. They have orders booked ahead for 1901. This house are doing an excellent export trade, much of their oil cloth printing machinery going to England, France and Germany. The demand for their hydraulic jacks and hammers is also very good. They state that 1899 showed an increase in business over 1898 of over 50 per cent.

Nephie & Levy report general conditions as very busy, about 1100 men being employed, and much work overtime being done. Among the new work recently started is a steam barge 200 feet long, 34 feet beam, for the Barrett Mfg. Company. Inquiries are numerous and prospects for a continuance of present busy conditions are very auspicious.

Every stock in the yard of the Wm. Cramp Ship & Engine Building Company is filled. Rapid progress is being made with work on hand, and bookings for the future assure no let up in present activity.

Lucas & Gliem report brisk business, especially in their cold saw cutting off and milling machinery department. They have large bookings of orders for future delivery. They have just made a shipment of a large floor boring machine to the Landis Tool Company of Waynesboro, Pa.

The Baldwin Locomotive Works present a scene of great activity these days, running full in all departments, with a large number of orders on hand. Part of the order for engines for the Great Central Railway of England is now being shipped. They are also shipping two locomotives for exhibition at the Paris Exposition. One of these is for the Great Northern Railway of England. The other will see service on the State Railway of France. This firm are also about beginning shipment of 15 10-wheel freight locomotives for the Pennsylvania lines west of Pittsburgh and are now finishing up delivery of order for engines for Mexican National Railroad.

The Pennsylvania Machinery Company are putting in a large plant to cost about $15,000, for the Schuylkill Iron & Steel Company, on the site of the old Grays Ferry Foundry. A complete plant to cost $2000, for the Carver Lumber Company, Atlantic City, N. J., is another of this firm's bookings. Shipments of a 60 horse-power automatic engine for a Camden, N. J., plant, and a 250 horse-power engine for the English Plaster Company, Oakfield, N. Y., will materially swell this month's volume of business.

The Southwark Foundry & Machine Company report themselves as well filled with work, with good bookings of orders, and quite a number of inquiries being made.

Philadelphia Machine Tool Company are running full time with a large number of orders for future delivery on hand. Two special lathes are under course of construction by this firm.

The Keystone Drop Forge Company are very busy, with lots of work on hand and orders for future delivery are numerous. The demand for their hoist hooks continues very heavy.

Nazel & Bassett are building a considerable number of automatic cigar vending machines on an order from a New York City house, part of which has already been shipped. Several orders from various local concerns for portable drills are keeping this department busy.

Wm. Sellers & Co., Incorporated, still continue very busy, especially in their crane department. They are running full time with full complement of hands.

The Energy Mfg. Company find the demand for their elevators, dumb waiters, &c., increasing to such an extent that they have been compelled to lease the former plant of the Clem Elevator Company. This addition will add greatly to their manaufacturing facilities. Among their January shipments were two large freight elevators for Japan.

Israel H. Johnson, Jr., & Co., are running their works to very fullest capacity, and could do considerably more work if they had the space to do it in, which they hope to have in the near future. During the past week they have taken an order for lathes from a large Western steel plant which is more than equivalent to their deliveries during the past 60 days.

Edwin Harrington, Son & Co., manufacturers of drills, lathes, &c., find no falling off whatever in the demand for their hoists. In addition they are very busy in their line of specialties in machine tools.

Henry Disston & Sons, Incorporated, are installing two additional boilers and re-erecting large brick base stack at their works.

The Paris & Orleans Railway of France have placed an order for 30 large ten wheeled passenger engines with the Baldwin Locomotive Works. This is the first order for locomotives ever placed by this railroad with an American firm. In design and construction these engines will differ but little from the ten wheeled passengers built by Baldwin's for American railways.

At Wilmington, Del., Hilles & Jones are very busy, especially on foreign orders, and have more hands employed than ever before. They are shipping large quantities of punching and shearing machinery, also straight-

ening rolls, to England, France and Germany. They have orders ahead for months to come.

Betts Machine Company of Wilmington, Del., are very busy, running night and day. Heavy orders for boring and turning mills have been booked, and enough work is on hand to keep them busy for six to nine months. They are working on a very large planing machine for the Krupp Steel Works, Essen, Germany. The weight of this machine is 120,000 pounds.

The foundry department of Harlan & Hollingsworth of Wilmington, Del., is very busy. The output is mostly marine work, windlasses, screws, propellers, &c.

Our Enormous Pig Iron Production.

A Total of 13,620,703 Gross Tons in 1899.

The statistics of the production of pig iron for 1899, just issued by James M. Swank, general manager of the American Iron & Steel Association, are of particular interest, since they give the details of the output of the banner year in the history of the American iron trade. During the year 1899 the production was 13,620,703 gross tons. During the second half of the year it amounted to 7,331,536, or at the rate of over 14,650,000 gross tons.

The production of the coke and anthracite furnaces was as follows:

Production of Coke and Anthracite Pig Iron.

States and Districts.	First half of 1898.	Second half of 1898.	First half of 1899.	Second half of 1899.
New York	110,298	111,113	149,739	235,085
New Jersey	54,695	45,986		
Pennsylvania:				
Lehigh Valley	145,379	122,889	174,340	253,309
Schuylkill Valley	150,060	152,361	175,195	247,152
Upper Susquehanna Valley	50,444	46,222	77,488	85,796
Lower Susquehanna Valley	254,282	240,559	257,381	303,339
Juniata Valley	16,805	39,999	38,150	73,927
Allegheny County	1,466,535	1,557,366	1,580,576	1,675,102
Shenango Valley	426,365	343,312	428,727	508,488
Miscellaneous bituminous	258,138	264,925	314,857	361,370
Maryland	105,684	83,184	101,715	132,602
Virgina	126,941	156,333	163,389	200,554
North Carolina and Georgia			3,397	14,438
Alabama	493,609	503,333	502,483	539,753
West Virginia	104,516	88,183	98,138	89,720
Kentucky	48,780	51,994	54,020	64,999
Tennessee	122,537	123,404	134,193	182,936
Ohio:				
Mahoning Valley	413,065	356,269	447,044	485,121
Hocking Valley		2,765	7,500	18,797
Lake Counties	194,601	194,275	183,136	281,560
Miscellaneous bituminous	330,737	343,062	342,202	382,234
Hanging Rock bituminous	57,440	87,793	92,289	131,853
Illinois	666,580	699,318	705,623	736,389
Wisconsin	72,722	61,836	64,091	97,380
Missouri and Minnesota	17,940	22,378	16,098	21,759
Colorado	35,597	55,625	48,961	51,592
Totals	5,722,700	5,770,484	6,160,682	7,175,255

The total production of coke and anthracite iron in Pennsylvania was 2,767,008 tons during the first half, and 2,767,633 tons during the second half of 1898. It rose to 3,046,664 tons during the first half of 1899 and to 3,508,573 tons during the second half of that year. Ohio produced during the four semiannual periods 995,843 tons, 984,161 tons, 1.072,171 tons, and 1,299,565 tons respectively.

The production of Bessemer pig was as follows:

Production of Bessemer Pig.

	First half of 1898.	Second half of 1898.	First half of 1899.	Second half of 1899.
Pennsylvania:				
Lehigh Valley	38,434	36,686	15,308	51,795
Schuylkill Valley	26,257	28,884	28,124	51,997
Upper Susquehanna Valley	50,444	46,222	77,488	82,115
Lower Susquehanna Valley	182,027	178,282	199,264	224,093
Allegheny County	1,210,249	1,249,015	1,247,263	1,334,808
Shenango Valley	368,815	256,410	351,203	391,219
Miscellaneous bituminous	177,548	191,692	194,818	224,048
Maryland	103,379	83,184	93,749	116,921
West Virginia	104,516	88,183	98,138	89,720
Ohio:				
Mahoning Valley and Hanging Rock bituminous	295,367	250,108	293,768	361,735
Lake Counties	173,833	188,915	166,704	264,355
Hanging Rock bituminous			21,940	60,026
Miscellaneous bituminous	330,737	331,575	327,499	378,878
Illinois	587,445	622,679	642,528	687,641
Michigan, Wisconsin and Minnesota	5,602	11,957	5,357	9,162
Missouri	48,931	70,008	47,746	48,618
Colorado				
Totals	3,703,584	3,633,800	3,788,907	4,413,871

The total production of Bessemer pig iron in Pennsylvania was 2,053,774 tons in the first half of 1898, 1,987,-191 tons in the second half, 2,113,418 tons in the first six months and 2,360,075 tons in the second six months of 1899. For Ohio the figures for the corresponding periods were 799,937 tons, 770,598 tons, 787,971 tons, and 1,064,-994 tons.

The production of basic pig iron is reported as follows:

Production of Basic Pig Iron.

	First half of 1898.	Second half of 1898.	First half of 1899.	Second half of 1899.
New Jersey	645	.....	.....	.....
Pennsylvania:				
Allegheny County	153,429	224,727	230,109	240,739
Other counties	102,318	102,229	128,771	138,989
Maryland, Virginia and Alabama	55,834	98,995	82,377	83,716
Ohio, Illinois, Wisconsin and Missouri	25,259	22,008	41,132	39,200
Totals	337,485	447,959	482,389	502,644

It will be noted that the production of basic open hearth pig iron has not developed very rapidly during the past 18 months.

For the charcoal industry the report shows the following:

Production of Charcoal Pig Iron.

	First half of 1898.	Second half of 1898.	First half of 1899.	Second half of 1899.
Massachusetts	1,243	2,418	978	1,498
Connecticut	3,426	2,910	4,390	5,739
New York	3,816	2,784	5,060	2,060
Pennsylvania	541	2,650	1,334	2,397
Maryland	.....	2,106	507	1,201
Virginia	.....	.....		
Georgia	7,315	6,447	.....	.....
Alabama	18,239	18,495	14,604	27,065
Texas	1,817	3,361	3,643	2,160
Tennessee	8,283	9,215	7,944	21,093
Ohio	3,108	3,243	2,862	3,614
Michigan	74,848	72,792		
Wisconsin	24,367	23,326	87,163	89,454
Missouri				
Totals	147,003	149,747	128,485	156,281

Stocks are reported to have declined from 571,577 tons on June 30, 1898, to 291,233 tons on December 31, 1898, to 81,220 tons on June 30, 1899, and to 63,429 tons on December 31, 1899.

Trade Publications.

Light Draft Steamboats for River Navigation.—The Marine Iron Works, Station A, Chicago, have issued an interesting pamphlet relative to their special design of light draft stern paddle wheel steamboats, which sets forth novel propositions offered by the company. The pamphlet treats comprehensively of the elements entering into the proper design and construction of steamboats intended to answer the purpose of navigation on bodies of shallow water. The experience of the company in this class of work has led them to make arrangements to meet the requirements of localities in which vessels of this kind are desired, but the facilities are not at hand for building steamboats. They present two propositions. The first is that they will make and ship the entire material for a complete river steamboat in such finished shape that a good millwright or house carpenter who will follow the plans need have no hesitation in undertaking the construction of such a boat. They cite, as an instance of this method of supplying such work, their experience in making a sale to a foreign country in which the boat was put together from their material and plans and is now being successfully operated, both financially and practically. They supply all the timbers, ironing, fastenings and parts for the hull as well as the machinery and equipment. Their second proposition is intended for those located at points distant from boatyard facilities or assistance, but who have all the material at hand necessary for the hull. In such cases the company make suitable designs, drawings and specifications and furnish the details to assist in doing the work. They then supply machinery and all the equipments for the boat except the lumber and fastenings, including a complete setting plan for the machinery, indicating the auxiliaries, connections, &c. The pamphlet contains a table of details pertaining to steamboats of this character, ranging in length of hull from 50 to 125 feet and intended to carry 9 to 100 tons on a draft of 20 to 30 inches. They have accumulated a great deal of data of value in this connection regarding efficiency of fuel, character of feed water, rapidity of current, possible removal of snags or other obstructions to easy navigation, and simple and certain methods of successfully overcoming such obstacles. The engines built by this company are of their own design. Steam is the only power they recommend for this service.

Self Traveling Trolleys. — The Pneumatic Crane Company of Pittsburgh, Pa., have issued a pamphlet describing their trolleys, which are designed to travel any distance, turn corners, switch from one track to another, &c. They are made to run at any desired speed, to lift and transport light or heavy weights, switching automatically. The device is operated by compressed air supplied through a feed pipe carried by the I-beam upon which the trolley travels. The tubing forming the feed pipe is jointed by couplings, each of which forms a body for a valve and incloses the valve operating mechanism by means of which the air is admitted to the hoist.

HARDWARE.

Condition of Trade.

IT was not expected that the volume of business would immediately assume large proportions in view of the fact that stocks in jobbers' hands are in many cases quite large, with a disposition to be conservative about further purchases. The course of things during the month thus far has been such as to justify this view of the situation, there being a fair business, but not especially heavy. A good many sorting up orders are coming in, and in season goods and others on which there was something of a scarcity last year there is an especially good demand. On many lines the capacity of the manufacturers will evidently be taxed to the utmost to produce a sufficient quantity of goods, but this will be largely owing to the difficulty of obtaining raw material, and not entirely to the extent of the demand. This, for example, is the case in Wire Cloth and in several lines in which Wire is an important element, the situation being such that the manufacturers cannot get Wire at all promptly or in the quantities called for. A similar condition prevails in regard to other materials, but not in many to the same extent. While the trade are buying cautiously it should not be inferred that there is evidence of a lack of confidence in the market, so far as the near future is concerned. Prices generally are strong, and the movement still continues upward, as goods the prices of which had not been brought up to the present costs of raw material are being gradually advanced. There is, however, a greater desire on the part of manufacturers to book orders, as they prefer to be making goods which they can ship out at once rather than accumulate any considerable stocks, which they are naturally disinclined to do on the basis of present costs. The retail trade generally continue to do an excellent business. It is doubtful if they have, as a rule, taken advantage of the advances in goods by marking up their selling prices in sympathy with the movement of the market. The high prices, too, are undoubtedly affecting their sales in some lines. Much interest will attach to the meetings of the several State retail Hardware associations which will be held next month, when many questions of practical importance will doubtless be discussed. There is little doubt that these gatherings of retail merchants, representing as they do so generally the most progressive and enterprising houses, are a feature of the trade, which is full of significance, as the retail merchants without assuming anything of an antagonistic spirit toward either manufacturers or jobbers are getting into a position where they can take united action for their own protection and for their own advantage in many ways. The fact that the jobbing trade are indicating their interest in these gatherings, and that manufacturers in increasing numbers are present through their representatives, is a feature which adds to the pleasure and profitableness of the meetings, and at the same time bears testimony to the influential position which the organization of retail merchants is taking in the trade. The recognition of the rights and interests of the different departments of the trade, with a view to harmonious relations between them all—manufacturers, jobbers and retailers—is certainly to be promoted by such organizations, and the results of the coming gatherings of retail merchants will be awaited with interest as indicating the position taken by the retail trade on the great questions which concern the whole trade. It is safe to say that the views of retailers must necessarily have great weight with both manufacturers and jobbers. The project of having a National Retail Hardware Association is under advisement, but the time has not yet come for an announcement of anything definite in this direction.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report a very good demand for everything except strictly winter goods. Unusually mild weather has prevailed for some time with an almost entire absence of snow. This, however, has helped the Hardware trade in other respects, as all kinds of outdoor operations have been actively pushed. Building has been vigorously prosecuted. A great deal has been done in this direction which would ordinarily have been deferred until late in the spring. The demand for small goods of all kinds is very satisfactory. Jobbers are having a fair movement in Tin Plate, the demand for furnace sizes keeping up remarkably well. Roofing Plates are being sold in good quantities for immediate delivery, owing to the open weather. The demand for Galvanized Sheets is exceptionally heavy, some jobbers reporting as good a trade as ever known at this season. Sheet Copper and Bottoms have been reduced 2 cents per pound. The Heavy Hardware trade is active. A much better demand is felt for Iron and Steel. Jobbers now have full stocks, owing to better deliveries by the mills, and are enjoying a larger trade in consequence. The prospects are very bright, as not only manufacturing consumers are free buyers but also the railroad companies.

St. Louis.

The amount of business to be had for 1900 was at the outset of the year considered by some as a rather indefinite quantity. Not because conditions did not point to continued purchasing by consumers, but because it was thought that the trade may have generously anticipated their wants and bought at the lower prices of 1899. It is, therefore, gratifying to state that orders to jobbers have in general exceeded both in quantity and value those for same period of last year. Prices are practically at a standstill, and the buying being done is of a steady nature and felt all along the line. The new goods being filled in at the higher prices are making their own argument for marking to-day's selling prices on kindred items bought at low costs. Jobbers' buyers are preparing for a conservative trade, and, taking January sales thus far made as a basis, it is confidently expected that there will be no let up in trade until July at least. It seems to be the general practice to cover wants at least six months ahead. The continuing scarcity in certain lines seems to be accepted as an assurance of stable prices. Steel Goods are in satisfactory demand, and some advanced buying is noted. There has been occasional talk of higher prices in this line. Wire Nails are being bought in satisfactory quantities, and price seems to prove no barrier. Barb Wire, due to season, is not in such free movement. Lots of Poultry Netting, however, are being laid in and a heavy sale looked for by the trade. But little price cutting is spoken of, jobbers and salesmen have almost nothing to complain of in that respect. Trade seems to be in such good shape that travelers make but few suggestions, and it is seen

that active hustle for business gets it in. Numbers of inquiries are coming to jobbers as to best locations for opening new stocks, and if any of the trade have intentions of selling out the time seems ripe to let that fact be known. Builders' Hardware opened up for the year encouragingly, and while comparatively little building is being done in St. Louis a marked improvement will be seen if an inkling is had as to exact location of the World's Fair to be held in St. Louis in 1903. A slight apprehension is had as to possible labor troubles. The Heavy Hardware trade is reported in good shape, and more inquiries and orders are coming in than for some weeks past. The past week has shown decided improvement. Market is firmer, and the trade are laying in wagon materials and kindred goods to supply wants for three and four months to come.

Notes on Prices.

Wire Nails.—Buyers of Wire Nails are largely confining their orders to present requirements. The advance of December 30 found a good many stocks depleted, but there were considerable quantities of Nails in some warehouses. Since that time business has been of an ordinary character, but satisfactory for the season. Manufacturers are pleased to have an opportunity to accumulate stock for the large demand which is anticipated. The market is firm at manufacturers' quotations, which are as follows, f.o.b. Pittsburgh; terms, 30 days, 1 per cent. off in ten days:

To jobbers in carload lots	$3.20
To " in less than carload lots	3.22½
To retailers in carload lots	3.35
To " in less than carload lots	3.45

New York.—Since the advance in Wire Nails last month manufacturers' prices have been more nearly adhered to than for some time previous, low prices having been in good measure disposed of. The only deviation in price apparent is for small lots from store, but improvement is also noticeable in this direction. Quotations are as follows:

To retailers, carloads on dock	$3.53
To " less than carloads on dock	3.66
Small lots from store	$3.50 to 3.75

Chicago, by Telegraph.—Manufacturers have had a large business, heavy buyers placing their orders so freely as to indicate that stocks are very light. Some apprehension exists of another early advance in prices, but manufacturers give no sign of their intention in this respect. They continue to quote single carload lots on the basis of $3.53, Chicago. Jobbers are having a very good demand from stock, continuing to quote small lots at $3.63.

St. Louis.—The new prices have apparently had no adverse effect on trade and volume of business is said to be very good. Single carloads continue $3.58, base, St. Louis, and small lots $3.68.

Pittsburgh.—The demand for Wire Nails is fair, but buyers as a rule are placing orders only for small lots. The mills are stocking up in anticipation of a large spring trade. We quote, f.o.b. Pittsburgh; terms 30 days, 1 per cent. off in ten days:

To jobbers in carload lots	$3.20
To " in less than carload lots	3.22½
To retailers in carload lots	3.35
To " in less than carload lots	3.45

Cut Nails.—While the demand for Cut Nails is only of a seasonable character manufacturers are maintaining former quotations, at which the market is firm. Manufacturers' quotations are as follows, f.o.b. Pittsburgh; terms 30 days, 1 per cent. off in ten days:

Carload lots	$2.50
To jobbers in less than carload lots	2.55
To retailers " " "	2.65

New York.—A fair demand is being experienced in Cut Nails for the season. There is some irregularity for small lots from store but otherwise prices are well maintained. Regular quotations are as follows:

To jobbers in carloads on dock	$2.68
To " in less than carloads on dock	2.76
To retailers, " " " "	2.86
Small lots from store	2.75 to 2.80

Chicago, by Telegraph.—A much better trade has latterly been enjoyed by manufacturers' agents, who report sales in 1000-keg lots. The difference in prices as compared with Wire Nails has had some effect on the Cut Nail trade. The factories have advanced their rates during the week and now quote on the basis of $2.68, Chicago, for mill shipments. Terms are 30 days, with 1 per cent. off for cash in ten days. Jobbers have advanced their prices and quote $2.90 for small lots from stock.

St. Louis.—The largest local mill, after a shut down of some weeks, has again started up and is said to have a fair prospect for trade. Other makers say sales for last year were ahead of 1898, due to some extent to differences in cost of Wire and Cut Nails. Jobbers' price is still at $2.80, base, St. Louis.

Pittsburgh.—The market is unchanged, buyers continuing to place orders only for small lots and to cover actual wants. We quote Cut Nails at $2.50 in carload lots and $2.65 in less than carload lots, f.o.b. Pittsburgh, freight to destination added. Terms 30 days net, or 1 per cent. off for cash in ten days from date of shipment.

Barb Wire.—As the season advances inquiries for Barb Wire for domestic purchase are more numerous, some of which are resulting in orders. Buyers are conservative in estimating their requirements, as present prices are likely to curtail the quantity of Wire used. The market is firm at the following quotations for domestic trade, f.o.b. Pittsburgh, net cash, or 1 per cent. off in ten days:

To jobbers in carload lots, Painted	$3.65
To " " Galvanized	3.80
To " in less than carload lots, Painted	3.67½
To " " " " " Galvanized	3.82½
To retailers in carload lots, Painted	3.80
To " " Galvanized	3.95
To " in less than carload lots, Painted	3.90
To " " " " " Galvanized	4.05

Chicago, by Telegraph.—The strike in some of the Cleveland Rod mills of the American Steel & Wire Company is causing no inconvenience to the manufacturers or the trade. The company have started their Waukegan Rod mill and are getting a sufficient supply of Rods from that and other mills to keep their finishing departments going. They also had good stocks of manufactured products on hand and believe further that the trouble will shortly be settled. The demand for all kinds of Wire, both Plain and Barb, has latterly continued to grow heavier and business is now on a large scale. Jobbers also report a good demand from their customers. Quotations are as follows, Chicago delivery: Single cars of Plain Annealed Wire, $3.38; Painted Barb Wire, $3.98; Galvanized Barb Wire, $4.13, with 10 cents additional for small lots from jobbers.

St. Louis.—Nothing unusual to report and movement is rather quiet this week. Painted in single cars is quoted at $4.03, with $4.13 for small lots. Galvanized is quoted at 15 cents above these prices.

Pittsburgh.—While demand for Barb Wire is only fair it is somewhat better than a month or two ago. The tone of the market is strong and we quote Painted Barb Wire at $3.65 in carload lots to jobbers, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh; terms net cash 30 days, or 1 per cent. off in ten days.

Smooth Wire.—An increase in the demand for Smooth Wire has developed and orders are being placed with more liberality. The market is firm at the following quotations, f.o.b. Pittsburgh; terms 30 days, or 1 per cent. off in ten days:

To jobbers in carload lots	$3.05
To " in less than carload lots	3.07½
To retailers in carload lots	3.20
To " in less than carload lots	3.30

Pittsburgh.—There is a moderate demand and the tone of the market is strong. We quote: To jobbers in carload lots, $3.05; to jobbers in less than carload lots, $3.07½; to retailers in carload lots, $3.20; to retailers in less than carload lots, $3.30, all f.o.b. Pittsburgh. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, $1.10.

Shot.—Under date January 22 the Eastern manufacturers of Shot announce an advance as per prices given below, terms net cash 30 days, or 2 per cent. discount for cash in ten days:

Drop Shot, sizes smaller than B, per 25-pound bag	$1.50
" " " " B, " 5- " "	.85
" " B and larger sizes, per 25-pound bag	1.75
" " B " " " 5- " "	.40
Buck Shot, 25-pound bag	1.75
" " 5- " "	.40
Chilled Shot, per 25-pound bag	1.75
" " " 5- " "	.40
Dust Shot, per 25-pound bag	2.10
" " " 5- " "	.50

On lots of 1 ton or more a special discount of 40 cents per 100 pounds, 10 cents per 25-pound bag, will be allowed.

Blacksmiths' Stocks and Dies.—An advance of about 5 per cent. has been made in the prices of Blacksmiths' Stocks and Dies, the market having a firm tone with a good demand.

Sheet Copper.—A reduction of 2 cents per pound has been made in the price of Sheet Copper, the base now being 20½ cents per pound.

Sad Irons.—An advance of ⅛ cent per pound has been made in the price of common Sad Irons by the united action of some of the leading manufacturers. The market is now represented by the quotation of 3¼ to 3½ cents for the polished Sad Irons in barrels, the price in 200-pound cases being ⅛ cent higher. Terms 60 days, or 2 per cent. discount for cash in ten days. Nickel plated Sad Irons, ¾ cent per pound higher than the Polished.

Double Pointed Tacks.—As we have already noted the Double Pointed Tack market has been for some time in a demoralized condition on account of the development ot exceptionally low prices in the presence of active outside competition. There is, however, some improvement in this regard, as some of the extreme discounts which have been current have been withdrawn. Present prices are still, however, lower than those determined upon by the associated manufacturers, as a discount of 90 and at least four 10's is readily obtainable.

Chisels and Drawing Knives.—An advance of about 7½ per cent. has recently been made by the associated manufacturers, and the price to the small trade on the common head Chisels is now discount 70 and 5 per cent. and on leather head discount 70 and 2½ per cent.

Blacksmiths' Bellows.—An advance of about 10 per cent. has been put in effect by prominent manufacturers of Blacksmiths' Bellows and the market has a firm tone.

Lane Brothers Company.—Lane Brothers Company, Poughkeepsie, N. Y., manufacturers of Hardware Specialties, inform us that they advanced prices on some of their lines on the 18th inst.

Coes' Wrenches.—An advance in the price of Coes' Wrenches, to go into effect to-morrow, January 25, has been determined on by Coes Wrench Company, Worcester, Mass., for whom J. C. McCarty & Co., 10 Warren street, and John H. Graham & Co., 113 Chambers street, New York, are agents. By this advance the base discount is made 25 per cent. instead of 33⅓ per cent., as heretofore, the extra discounts remaining as before.

Paris Green.—Orders for Paris Green are not being received very liberally by manufacturers. Considerable Green was carried over from last season by jobbers. Chemicals are in a strong position and there is no immediate indication of a decline in the price of Paris Green. On the other hand, an advance in price is not unlooked for. The market is firm at the following quotations:

	Cents.
In Arsenic kegs or casks	13
" kegs, 100 to 175 pounds	13½
" kits, 14, 28, 56 "	14½
" paper boxes, 2 to 5 pounds	14½
" " " 1 pound	15
" " " ½ "	16
" " " ¼ "	17

Glass.—The ruling price of Window Glass is low and reports of a further possible reduction of 2½ to 5 per cent. are in circulation. The prices made by the American Window Glass Company appear to be for the purpose of disconcerting outside factories, as specification restrictions and other conditions result in a comparatively small amount of Glass being obtainable from the combine. The stronger outside factories are refusing to meet the combine's cut, while the product of those financially unable to hold for a higher market is not enough to satisfy purchasers' demands. Carloads of Glass are quoted as follows: Single Strength, 90 per cent. discount; Double Strength, 90 and 10 per cent. discount.

Paints and Colors.—*Leads.*—At a meeting of the National Lead Company, held on January 18, no change in the price of Lead products was made. The amount of business done since the first of the year in these products has exceeded that for the same period a year ago. Quotations for White Lead in Oil are as follows: In lots of less than 500 pounds, 7 cents; in lots of 500 pounds and over, 6½ cents per pound.

Oils.—*Linseed Oil.*—The market continues firm at former quotations for Linseed Oil, but lower than the price of Seed would justify. This discrepancy has apparently been a part of the policy pursued since the Seed market has been under control, and one result is hardship to independent factories.

The Flax Seed market held last week at $1.50 per bushel for prompt delivery. One lot of September Seed was sold at $1.05 per bushel, this anticipating the crop not yet planted. Oil made from $1.05 Seed would, under natural conditions, be marketed at about 35 cents per gallon in car lots. The comparisons should be interesting, taken in connection with future developments of the Oil market.

A limited business in City Raw Linseed Oil is being done at the following quotations: In lots of less than five barrels, 54 cents per gallon; in lots of five barrels or more, 53 cents per gallon.

Spirits Turpentine.—The Turpentine market is dull at this point, business being confined to small lots, covering only immediate needs. Holders are firm in their views at present quotations of 53 cents for Southerns and 53½ cents per gallon for machine made barrels. The open winter may hasten reports from the new Turpentine crop, which under ordinary conditions is due in April. Summer delivery contracts are being accepted in the South, export orders being prominent.

Price-Lists, Circulars, &c.

Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.: Catalogue for 1900 showing their line of Bicycles, comprising ten models, ranging in price from the men's roadster, medium grade, at $25, to the chainless at $60. The catalogue is attractively printed, and gives a fine view of their large plant. The company have been making Fire Arms for 29 years, and Bicycles for the last 16 years.

Athol Pump Company, Athol, Mass.: 1899 price-list of Suction and Force Pumps.

The Indiana Mfg. Company, Peru, Ind.: Catalogue of North Star Refrigerators, including also Ice Chests, Nursery Refrigerators, apartment house designs, sideboards, hotel and restaurant sizes, &c. They are offering the trade a new style of construction with an improved removable ice chamber. The catalogue covers 48 pages, and is an exceptionally handsome publication.

The Kokomo Telephone & Electric Mfg. Company, Kokomo, Ind.: Catalogue of Specialties, comprising the Kokomo Mild Microphone Transmitter, Long Distance Telephones, Desk Telephones, Switchboards, Magneto Bells, Receivers, Batteries, &c.

I. E. Palmer, Middletown, Conn.: 1900 illustrated catalogue of Hammocks and Accessories, covering the field of comforts to be derived from Hammocks under varied conditions.

Minnie & Bromeling, Eaton Rapids, Mich., will soon remove to a new store, 34 x 100 feet, two stories. The establishment is steam heated and electric lighted.

T. L. Freed has succeeded to the Hardware and Implement business of Freed & Miller, Elmer, Mo.

Getting on the Jobbers' List.

THE following letter from an enterprising Hardware merchant is in reply to one from a correspondent in Texas, who desired to know how he, as a buyer of good quantities of Hardware, might get on the jobbers' list and thus secure advantageous prices. The letter which we print below, while it does not give explicit information on this point, contains suggestions which are deserving the attention not only of the larger retail houses, who are entitled to relatively close prices, but to all careful buyers as touching on the question of good buying, a matter to which most small merchants do not give sufficient attention:

I note the inquiry in your issue of January 18, from a Texas retailer, asking how it is possible to secure a jobbers' classification in the purchase of goods. Texas is a long way off and the conditions may be varied and many, as compared with a section of the country constantly in touch with manufacturers and manufacturers' agents. Yet, in a country of large distances such as Texas is, it would seem the large retailer might command favors of this class more readily than the dealer surrounded by more or less of a jobbing center.

THE MAN HIMSELF—

much depends on him, his methods of buying, his acquaintance with makers of goods and their representatives, his power of persuasion, his ability to hold off a contract until he gets what he wants—whether he be able to place his neighbors' contracts with his own, or whether he is able to promise purchases within a specified length of time much greater than his single purchases; these and many other conditions we do not know of, and yet are under his control, have much bearing.

THE TERRITORY

in which he is situated may be against him, may be covered by a jobbing house in a nearby town, whose every contract covers the wants of those within a radius of one to two hundred miles. In many lines in this same territory he may be as large a buyer as his jobbing neighbor, and yet be classed in his purchases as a retailer. Perhaps he takes the word of every traveler visiting him, with the statement that he is selling him as low as he can possibly buy goods anywhere, and has made but little effort to place the entering wedge on some one line as a starter, or having done so, has done it at cross purposes and without success.

A STATEMENT

that can be verified is as follows: In nearly all the Northern, Middle and Eastern States there are at present from 10 to 15 good sized retail houses in each State, ranking as jobbers in their buying for nearly all staple lines of goods. Not always the extreme jobbing price is secured, but in every case the price is better than at retail. This is accounted for largely from the fact that for some years past it has been the policy of many manufacturers to select some one good retail house, in a good sized town, and place them on the jobbing list—possibly for better representation, or for the reason that existing jobbers were not covering the territory to advantage. Again, these retail houses may have made up a business on certain goods, justifying their being so placed. These conditions have occurred with makers of Saws, Hammers and Hatchets, Auger Bits, Twist Drills, Taps and Dies, &c., leading to many additional jobbing contracts. We do not see why these conditions should not apply in similar cases in far Southern and Western States, and are satisfied that in some cases they do.

SOME LINES WORTH TRYING FOR.

There are lines of goods purchased by all dealers, be they retailers or jobbers, coming under season or quantity goods, on which it might be well for your correspondent to make the effort for the extras he seeks. These are his Shovels, his Steel Goods, Scythes and Snaths, Cross Cut Saws, Axes, Corn Knives, Bale Ties, &c. If, as he states, he is very frequently a quantity buyer, these lines as a rule are classified by the makers so that quantities not extreme shall keep him always beyond the pale of the retail buyer; while he might not be able to purchase in such quantities as to reach the lowest classification.

His situation may be such, too, as to his neighboring dealers, and those of nearby towns, that by making

COMBINATION SHIPMENTS

his quantity price and freight rate may be so lowered as to bring his goods in many lines to him at jobbing prices, still giving the neighboring dealers their goods as low as it is possible for them to buy. This should be particularly true if, as he writes, he is a carload buyer in many cases. There are not many lines of goods in these days in which car lots do not bring a bottom price. I am inclined to think he must be unfortunate in his location, and as to buying headquarters, in that he should not long since have found this out.

AS TO NAILS AND WIRE,

particularly the latter—and it is of this your correspondent makes a great complaint—he must bear in mind that he has run against a very pecular state of affairs as regards both Nails and Wire. The prices he names are practically correct ones for his location, in car lots; his only advantage in being on the jobbers' list in these lines would be possibly the 15 cents per hundredweight. The fact that he and his neighbors and even the consumers can buy at less than carload rate, near at home, is what hurts. He must bear in mind he is up against a market covered by advances all the way from $2 to $4. That in cases of this kind, with men anxious to turn goods into money, the market, as he quotes it, is not legitimate. All jobbers were heavy buyers at low prices—many of them see fit to unload at cut rates, either for obtaining ready money or in the fear that a decline in these goods may not be far away. With the market in its pecular condition, and but one supreme headquarters for Nails and Wire, it would probably be right hard at this stage to reach a position on the jobbers' list. Yet it is worth the trying. I assure you none of these things are secured without the asking, and with the plainest statements made. Sales of $50,000 to $75,000 in the country from which your correspondent hails ought, in many lines, to place him as a jobber, unless conditions are very peculiar, and he does not state them.

HOW TO TRY.

No rule can apply as to bettering his condition, other than persistent, never ending effort, and keeping thoroughly posted as to prices.

Keep up your trade papers, and read them thoroughly. Watch the markets, read the advertisements, write to every advertiser who you think may be headquarters for the goods you need. Write to the manufacturers, making a plain statement of your case; keep on writing. Make friends with the traveling man; get the best he has to offer you, and be posted well enough to know it is the best.

THE MAN WHO DISCOUNTS,

as he says he does, every bill of goods purchased, can command most anything he asks for. "Cash does wonders;" a plain statement of facts does much to inspire confidence. The help of friendly salesmen adds to that confidence, and confidence leads to the lowest prices. You may not rank strictly as a jobber in your State of Texas, but I am sure you can by constant hammering add many extras to your present discounts.

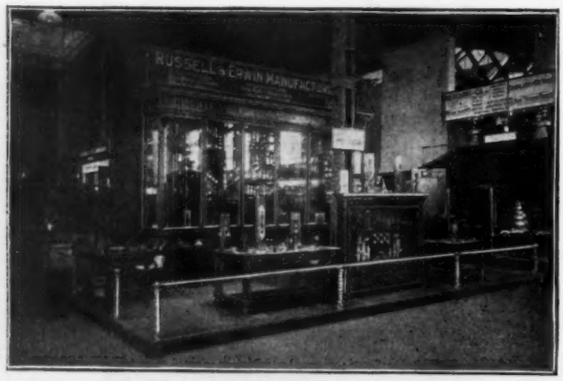
J. B. Long Hardware Company have succeeded Henry E. Kemp Hardware Company in the wholesale and retail Hardware, Stove, Agricultural Implement, Sporting Goods and Mining and Mill Supply business at Phœnix, Ariz.

Hardware Exhibits at the National Export Exposition.

Third Article.

Russell & Erwin Mfg. Company,

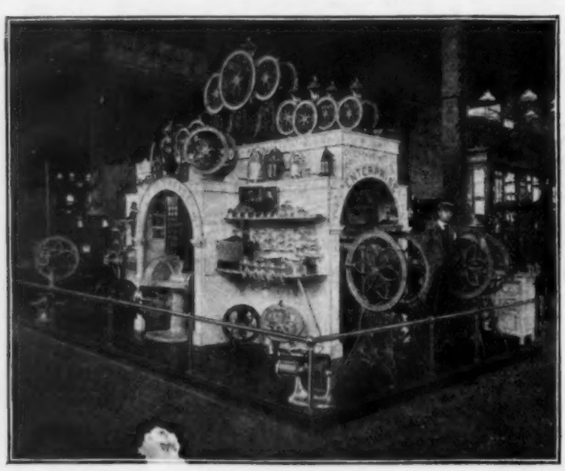
New York, occupied a space 27 x 17 feet, fronting on three aisles. The gigantic ebony finished showcase used by them at the World's Fair formed the background of the exhibit. In the lower part of the case were shown



Sleigh, Stove and Tire Bolts, Iron and Brass Jack Chain, Rivets, Nails, Brass Hinges, Iron and Brass Screws, Letter Box Plates, Padlocks, and other goods. One side of the upper part of the case was utilized to show a line of the Swan goods, for which the company are sole selling agents. The line covered Chisels, Gouges, Drawing Knives, Augers and Bits, Gimlets and other Tools. The Ogden line of Tools was also shown. In the front portion of the case was shown a fairly full line of Builders' Hardware and Locks. A small showcase near the front of the exhibit carried a line of fine Door Trimmings, including Pressed and Cut Glass Knobs. A full sized model of an up-to-date car door was prominently located, fitted with a Columbia Door Check and Spring, and a Russian Door Stop. The model attracted a good deal of attention. A handsome table carried a collection of mounted Vestibule Door Locks and Bells. The exhibit was inclosed within an ornamental bronze railing mounted on cast bronze supports.

The Enterprise Mfg. Company,

Philadelphia, had a large and well planned exhibit, fronting on three aisles. In the center was a hollow wooden structure, painted white, cross shaped in design, with



four arched entrances. The interior was used as an office. The exterior of the structure was used to display the line of goods made by the company. On the top was a large group of Coffee Mills, including most of the sizes and styles made in the company's works. The structure was designed to provide for pyramidal shelving, and on the shelves were seen all the well known Enterprise goods, including Meat Choppers, Raisin Seeders, Cherry Stoners, Mrs. Potts' Sad Irons, Tobacco Cutters, Lard and Fruit Presses, Sausage Stuffers, Cork Presses, Cheese Cutters and Weighers, Measuring Faucets, Dried Meat Cutters, and other goods. On a corner cabinet many of the goods were shown in actual operation. Under the south arch was a large power Chopper, and above it a case containing 25 gold, silver and bronze medals, representing about one-third of the awards won at various expositions. In the office were displayed views of various departments of the company's works, diplomas, and other interesting mementos of the company's success. The exhibit was in charge of Frank Wiswell, the company's well-known traveling representative.

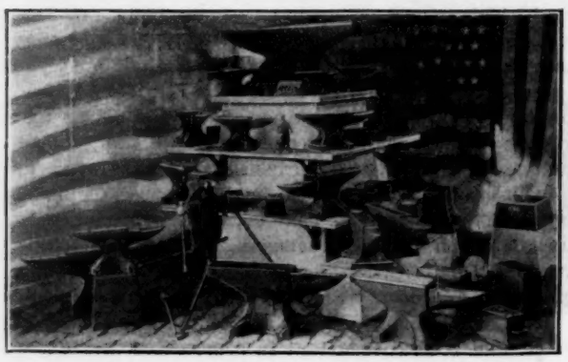
Norton Emery Wheel Company,

Worcester, Mass., designed their exhibit with the idea of showing the range of the product of their work. The very coarsest and largest wheels were shown in three massive Emery Wheel columns, one on each side and one at the back of the exhibit. Between these were dis-

played boards in the form of arches showing a great variety of Wheels used on the Brown & Sharpe and Landis Universal Grinding Machines, of which they make a specialty. In the showcases were found Emery Wheel specialties of every shape, size and grain, also a full line of the well-known India Oil Stones. The machinery exhibit consisted of the Walker Improved Tool and Cutter Grinder, a line of standard Grinding Machines, and the well-known Bath Indicator.

The Eagle Anvil Works,

Fisher & Norris, Trenton, N. J., had a very interesting exhibit of Anvils and Vises. To demonstrate the wearing qualities of their productions the firm displayed a number of Anvils which had been in use for various periods, including one which had been in use 39 years and two others from 19 to 21 years. On a shelved pyramid in the

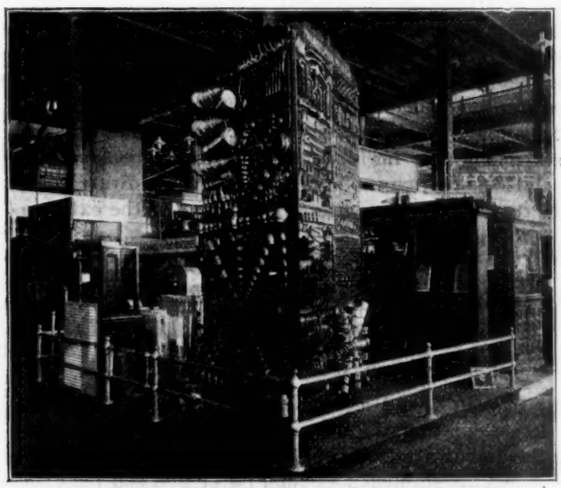


center of the space was a line of the firm's productions, including Blacksmiths', Plow, Saw and Farmers' Anvils. The pyramid was surmounted by a 1200-pound Anvil

bearing the firm's trade-mark in gilt, said to be the largest Blacksmiths' Anvil ever made. At the rear of the exhibit was a display of diplomas won at different expositions, posters and printed matter. The exhibit received a silver medal and diploma, and in connection with this fact we are advised that the Eagle Anvils were awarded their first gold medal by the Franklin Institute in 1853, 47 years ago.

Thos. Devlin & Co.,

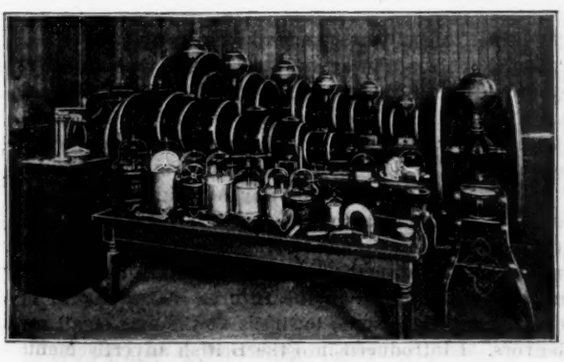
Philadelphia, had a liberal space fronting on three aisles, and their display covered, besides an exhibit of the productions of the National Malleable Iron & Hardware



Works, operated by them, exhibits of the Philadelphia Hardware & Malleable Iron Works, another of their plants; the National Cutlery Company and the National Specialty Mfg. Company. The productions of the parent works were for the most part shown on a three sided pedestal more than 10 feet high, the designs covering Marine Saddlery, Carriage and Wagon Hardware, Malleable Iron Pipe Fittings, Coil Fittings, Pipe Hangers, Rosettes, Expansion Plates, Pipe Straps and Hooks, Flange Unions, Foot Rail Brackets, Flag Pole Holders, &c. The galvanized iron pipe railing around the exhibit, with a stair railing inside the space, showed to advantage the line of Hand Rail Fittings made in the works. The exhibit of the Philadelphia Hardware & Malleable Iron Works was, most of it, displayed in a handsome showcase, and included a splendid line of hot air Registers. A line of Radiators was displayed elsewhere in the space. The exhibit was awarded a silver medal and diploma.

The National Specialty Mfg. Company,

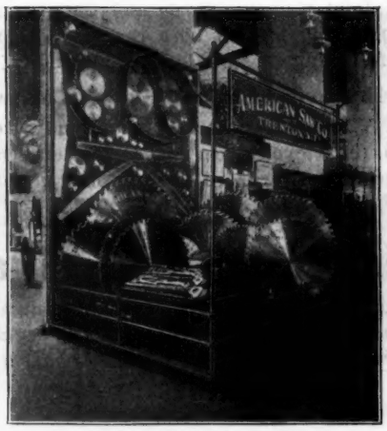
Philadelphia, had an exhibit of their goods within the space occupied by Thos. Devlin & Co. The display consisted of Coffee Mills of various sizes, Tobacco Cutters,



Measuring Faucets, Sausage Stuffers and Lard Presses, Measuring Pumps and Bung Hole Augers. The Sausage Stuffer and Lard Press was shown in operation to interested visitors, the swinging arch and removable cylinder features of its construction evoking much interest. The goods were arranged upon a table near the front railing, easily accessible for purposes of examination. This exhibit also was covered in the award of a silver medal and diploma.

The American Saw Company,

Trenton, N. J., had a corner space on a main aisle, and made a splendid exhibit of their goods. The rear of the space was taken up with a fine display of Chisel Tooth



Saws, including their Brooke, Goulding and Prosser patterns. One of the saws was fully 84 inches in diameter. A maroon cloth covered screen back of the Saws much improved the showing, and accommodated Concave Saws, Cross Cut Saws, Gang Saws and Band Saws, which increased the effect. Within a neat iron railing which surrounded the exhibit was a bench carrying an extensive line of Triumph and Alligator Wrenches, Saw Swages and Saw Sets.

The Hartman Mfg. Company,

Ellwood City, Pa., manufacturers of Wire and other goods, had a nice display of their specialties. Their exhibit was inclosed within a section of their steel picket fence, with a steel gate. A wrought iron canopy frame

occupied a prominent position, and the post was used to carry a revolving stand of Wrought Iron Fence Sections. Tree Guards, Fencings, Chairs and Tables, all of Wire, were shown, as also were different styles of Wire Mats, including their Flexible Wire Mat, Double Fabric, making really two Mats in one.

The Bevin Bros. Mfg. Company,

East Hampton, Conn., exhibited a large and handsome oak showcase containing a fine display of Gong Bells of every description, Sleigh Bells, Hand Bells, Cow Bells, Ship and Factory Bells, Altar Bells, Table Bells. There were also Trouser Guards and Toe Clips to interest the trade in the line of Bicycle Sundries.

The Goodell Company,

Antrim, N. H., manufacturers of Cutlery, had a prominent position on a main aisle. At the rear and sides of their space were partitions of cherry wood to the inner sides of which were secured several showcases, also in cherry, carrying samples of the company's different lines of Table Cutlery. Space in each rear corner was used to show Seed Sowers. Other cases contained displays of Bread Knives, Potato Knives, Shoe and Butcher Knives, Game and Joint Carvers, Steels and Can Openers. A card conspicuously located bore the inscription, "Hot water proof—boiling does not loosen the handles."

Frank E. Bundy Lamp and Sundry Company,

Elmira, N. Y., who manufacture the Bundy Acetylene Gas Lamp for bicycles, carriages, firemen, trainmen, reading, &c., were awarded the diploma of honorable mention.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Builders' Hardware.

A correspondent in Utah calls attention in the following communication to some matters connected with the sale of Builders' Hardware, with suggestions as to how the quality to which he refers and with which the trade are already familiar may be remedied:

Recognizing *The Iron Age* as a central medium for live Hardwaremen in which to air their ideas concerning trade conditions generally I find that, while many things have been profitably discussed, one important line—Builders' Hardware—has had little attention. I think this branch of the business is and has been for several years in a very bad condition.

LOCATING THE FAULT.—The first thing to do is to locate the fault; then to find a remedy. The manufacturer cannot be blamed for producing inferior goods, as he has constantly been driven to make something cheaper to meet competition. The fault lies between the architect and contractor. The contractor is the one who is benefited, and the architect is to blame for accepting inferior goods. In public buildings where a good grade of Hardware is used competition is so strong that the successful bidder's profit is only glory (if he is honest), and the same is true of some fine residences. Then there are cottages ranging in price from $600 to $2500. In this class the Hardware is furnished for about one-third of what fair grade goods should cost to be in harmony with the design and finish of the house.

LARGE SALES VS. PROFITS.—Men in charge of departments are often too anxious to make big showings in sales. If they would show how many goods they traded for money received and bear in mind "dummy samples" and the time devoted to each job, &c., they would find the purchaser often gets the best end of the deal. I believe there would be just as many houses built if merchants asked a fair price for the goods, and if they would see how good a grade they could sell instead of how cheap, they would not only benefit themselves but the purchaser.

Builders' Hardware is not a side line but one of the principal lines. Why should it be abused?

Is This a Good Time to go into the Hardware Business?

This question is touched upon in the following letter, which has come to us from a correspondent who finds his plans for embarking in business balked by the high prices now current for many Hardware goods:

I have been successful to a certain degree in getting capital interested in starting a big retail Hardware business in an active mining and agricultural center, where I consider there is a good opening for this line of business, but owing to the extreme high price of Hardware at the present time my benefactor is timid about putting up the money, being afraid that the bottom will drop out of the market before we would be able to turn our stock. I will appreciate it if you will favor me with your opinion on the future prospects of prices in the Iron and Steel trade, which of course has all to do (barring trusts and combinations) with the prices of Hardware in general.

Do you think there is likely to be any decline in light Hardware?

It looks to me as though we were just beginning on a term of unequaled activity in the Iron and Steel trade, that the high prices, with but few exceptions, have come to stay, and that the opportunities under these conditions are more favorable to the retail Hardware merchant than when prices are ground down to the extreme low water mark.

An American Manufacturer's Experience in the English Market.

FROM A CORRESPONDENT IN ENGLAND.

LAST week I had a conversation with a prominent American manufacturer, having a large connection with the Hardware trade of Great Britain, who long ago determined to establish a London house and sell his own goods.

Advantage of a London Warehouse.

"Will you tell me the advantages an American house possesses by opening its own warehouse in London?"

"That is the toughest proposition we Americans have to face in opening up business in this country. The problem is beset with difficulties. I have been running a warehouse over here for nearly 14 years, and if I were to start over again I should do many things differently. But, facing the situation squarely, I would again open a warehouse; just as I have no intention to-day of closing it."

"What was your earliest experience?"

"When I came over here my particular specialty was unknown. I found that before I could do anything at all in the way of paying business I should have to do an enormous amount of missionary work. I practically had my choice of trades to cultivate, and after summing up the whole situation, I determined that the furnishing Hardwareman was the best for my purpose. Accordingly, I began to advertise in the Hardware papers, and tramped the streets of London and all the big cities, making myself known to the trade. My first year's efforts did not pay for the boot leather, and many a time I felt inclined to throw the whole business up out of sheer fatigue."

"Did not the jobbers or agents help you?"

"If the jobbers and agents had known their business they would have helped me; but when I called upon them I was told that there was no demand for my goods and, therefore, no use in handling them. The fact is these agents do not realize the importance of cultivating a trade. In my opinion any American who comes over here is playing a fool's game if he leaves himself in the hands of the jobbers or agents. They only concern themselves with the trade immediately in front of them and pay no heed to the future. After a year or two, I began to see some business at the end of all my endeavors. I introduced into the British advertisements an element of Yankee cleverness, which took the breath away of many of the old conservative traders, who seemed to imagine that sketchy blocks and attractive figures in an advertisement were *infra dig.* I made it a point to go where Hardwaremen meet, talked to them,

subscribed to their various funds, so that what with my own personal work, my advertisements and my well-known disposition to be friendly on all occasions, I soon began to be well talked about. By this time I was importing quite a quantity of cases, and my little warehouse was soon crowded.

Jobbers' Hindsight.

Now observe what followed. After I had spent many thousands of dollars in missionary effort, in rent, rates, taxes and traveling, I found the jobbers and agents tumbling over each other to secure the representation of my goods."

"What did you do?"

"Of course, I had to make a choice. It was quite clear that either I should have to dispense with the agents and run my business in England on my own lines, or close down my warehouse and leave the business in the hands of jobbers and agents."

"So you stuck to your warehouse?"

"I had to, for two reasons. First, it was quite clear my business was only beginning over here, and if anybody could develop it quickly it was myself, and not the agents. Second, I had determined at the beginning to obtain a higher price for my goods in this country than I do in America, and I fixed my price accordingly. No American firm can take a warehouse and offices in this country and sell goods at the same price they do in America. The up-keep of an establishment like mine is very expensive, and the British trade should pay for it. But if you can obtain your price and sell in large quantities, you stand to win; so I determined to stand by my warehouse and obtain a more or less advanced price—and that is why I am here now.

What the Jobbers Did.

"I had no end of trouble over the jobbing trade. I soon found that my goods were being obtained from New York through the commission merchants there, and many a case of goods bought from the factory was shipped out of New York for Europe and elsewhere, which really came to England. Meantime the young men in my factory, as well as my partners, not realizing my difficulties here, thought they were increasing my trade by fixing up terms with New York shippers, and I can assure you I had to put my foot down hard to stop it. Naturally, the jobbers would have been only too glad to buy at New York prices and undersell me."

A Patent Advantage.

"But then you are differently circumstanced from many American exporters, because you have an article which is patented."

"Oh, yes, I quite agree, and I am far from saying that the course I took is necessarily the right one for everybody. For example, I should be inclined to think that American manufacturers of small Tools would be unwise to start their own warehouses here. They would necessarily compete with their own goods, obtained through commission agents, or meet equality keen competition by rival manufacturers. I am free to confess that the pivot of the whole position, so far as maintaining a warehouse is concerned, consists in your ability to maintain prices. I should say that such a firm as Goodells are acting wisely by passing their goods through the usual trade channels.

'British Establishment' Defined.

"By a British establishment, I mean a large warehouse with a staff of clerks and drummers. I do not say it would be unwise for an American firm to keep a small warehouse for storage purposes, and possibly one or two men engaged to in a general way guard their interests. I am inclined to think that if a business of any volume is done in England a small warehouse with a small office is advisable, because it is a kind of jumping off ground, which makes you more independent of the jobbers and agents."

Advice to American Manufacturers.

"Suppose, then, that an American coming over here desires British trade, but does not care to risk your policy. At the same time he wants to be independent of jobbers and agents. What would you advise him to do?"

"I would advise, first of all, to advertise freely in the trade press. The British Hardwareman takes a lot of hammering before he knows you are around. Let the advertisements always be smartly written; change them every week; let there be something striking in each insertion; and, in short, create an impression that you are quite alive. It is astonishing what confidence the Hardware trade places in a firm which has a reputation of being fully alive. Next in importance to advertising, I would place making an authentic list of every man in the country who could handle your goods. There are 8000 or 9000 Hardwaremen in this country; I believe 4000 of them can sell my goods. I keep a clerk devoting all his time keeping up to date my index of present and possible customers. The way to do is to get a really good directory, say Kelly's Metal Trades Directory, then circularize the whole lot, and you will get a great number of responses, some promising, some hopeless. Strike out the unimportant and cultivate the others. Then you must watch the trade information as it appears in the trade journals; keep a close grip on mercantile reports; and in any and every way in which information is to be obtained acquaint yourself with the *personnel* of the trade. In a year or two it will be astonishing what a valuable list is at your disposal. Now comes the critical point. Do not go to the expense of maintaining a British establishment on anything like an extensive scale. Go to the jobbers and say: 'Gentlemen, I have prepared the ground; I have created a demand for my goods; somebody must distribute them; what can you do in the matter?' It is only by keeping a firm hold upon the business that you can make yourselves independent of the jobbers, and the policy I suggest is, in my opinion, the only way in which it can be done in this country.

"The British trade is worth fighting for, but it requires hard work and enthusiasm. It won't be captured by sending a man over here once or twice a year, who makes friends with a few jobbers and then goes back home thinking his interests are well protected in their hands. It is a delusion and a snare. The American must himself come over here and grow up with the country and protect himself by sound business methods."

Request for Catalogues, &c.

M. B. MARSHALL, manager of the Saranac Inn, Saranac Inn, N. Y., who, in connection with their hotel, conduct a general store business, is desirous of receiving catalogues, price-lists, &c., relating to fixtures and devices for store equipment. They are putting up a new store, 38 feet wide, 60 feet in length, two stories and basement, in which they will handle Hardware, Paints, Oils, groceries, dry goods, &c.

E. C. Atkins & Co.'s Catalogue.

E. C. ATKINS & CO., Indianapolis, Ind., have just issued a new illustrated catalogue of 156 pages, containing their complete line of Saws, Saw Tools, Mill specialties, &c. Some of the lists have been revised and particular attention is called to additions and changes in the line of Cross Cut Saws and small goods, such as Hand Saws, &c.

C. S. Allen has purchased the business of L. T. Fuller, Calvert, Texas, and will continue the wholesaling and retailing of Hardware, Stoves and Tinware, Agricultural Implements, Carriage and Wagon Makers' Supplies, Tin and Sheet Iron Work, &c., at the old stand.

Hardware Organizations.

Indiana Retail Hardware Dealers' Association.

The circular given below has been issued by the Indiana Retail Hardware Dealers' Association through W. H. Weed, president, Vincennes, and W. W. Robb, secretary, New Harmony. After reciting some of the reasons why all of the retail Hardware merchants of the State should become members of the association, and thus prepare the way by united action for the correction of abuses which cannot be mastered by individual effort, the circular, it will be observed, calls attention to the annual meeting on February 7 and 8 at Evansville, and gives the programme so far determined. The circular is as follows:

From the time of the beginning of trusts and combines it has been the policy of the manufacturers and jobbers to combine and make every effort to thoroughly understand each other, thereby protecting their business interests, which at times seemed destined to utter destruction because of illegitimate and disastrous competition that from time to time becomes prominent in the channels of their respective branches of trade.

It is apparent to each and every intelligent retail dealer that the pursuance of this policy has been and is now productive of financial success to its participants, and that the prosecution of this same policy would be equally as profitable to ourselves and that this or some like move is most necessary at this time when such inroads as failure and possible disaster to our business stare us in the face.

Our present business condition is peculiarly important, and should enlist the attention of every retail Hardware dealer.

Prices and terms are being changed, and we are threatened with a return of box and dray charges. Railroad rates on freight are being advanced, and our interest is not being considered. Manufacturers and jobbers are alive to the changes and are protecting their interests. Catalogue houses and department stores, meeting with little or no opposition, are having their own way, and are spending hundreds and thousands of dollars in glaringly advertising cheap imitations of genuine articles, and us as middle men and robbers, placing themselves before the world as public benefactors by diverting our trade from its proper channel and carrying into effect their open boast that they will eventually drive the retailer out of existence and kill the trade of the small towns, while we (together with our associate retail dealer) by our silence give weight to their extravagant and unprincipled bluster.

Is it wise to continue our past course? Would it not be wiser to get together, study the situation and meet the same intelligently?

If manufacturers, jobbers, trusts and combines find it necessary and profitable to organize, should we who stand face to face with the consumer (whose interests we are supposed to guard) not also find it necessary and profitable? We can accomplish nothing by individual protest, and the measure of our success will depend solely upon the interest taken by the dealers; it, therefore, behooves every retail Hardware dealer in business to give this matter his earnest and undivided attention, devoting his time, means and talent to the cause until a better condition of our business is established.

Are you with us? If not, you should be.

Send in your application, the same shall date from the next meeting, February 7 and 8. We have neither time nor funds to solicit dealers personally, and it should not be necessary. We want not only your membership, but your earnest and active assistance, and whether you send in your application now or not, we earnestly desire your attendance at the meeting in Evansville, February 7 and 8, when both visitors and members will be expected to take part in the discussion of this problem.

We already have a good membership from all parts of the State, and we are pleased to say that the secretary is daily receiving applications and inquiries.

At the next meeting resolutions will be offered to make this a State organization, and hold future meetings in more convenient places.

The Committee on Arrangements has secured reduced rates on all railroads of one and one-third fare, provided we have 100 in attendance who have paid full fare of not less than 75 cents each. Of this we are well assured because of a circulation of over 2000 notices and invitations to which fully one-fourth have replied and signified their intention of attending. Of these quite a number are north of Indianapolis, and so far as possible it is desired that all who come through that city meet M. L. Corey of Argos, Ind., at that point, and come in a body. Write Mr. Corey for particulars and time of meeting.

To the sister States bordering us we extend a special invitation to both visit and unite with us in this work. We have invited personally some of the most prominent members of the Illinois State Association and expect their attendance. Also the editors of various Hardware papers.

Let us have your application for membership and presence at the next meeting. Write the secretary for further instructions.

The following subjects will partially constitute the programme for the meeting, all of which have been assigned to dealers in South Bend, Argos, Princeton, Oakland City, Vincennes, Mishawaka, Evansville, New Harmony and other places not yet heard from:

1. Opening address.
2. What have you done, what can you do and what shall we plan for the association?
3. Special address of welcome to northern and foreign visitors and members.
4. Our duty to the association, to our competitors, to the "Knight of the Grip" (is he friend or foe?).
5. Evening session—smoker—pleasantries to the trade.
6. How to meet department, racket and catalogue house competition.
7. Objects of the association.

All of which will be followed by discussion. Come and take an active part. All who anticipate attending the meeting at Evansville will please notify the secretary by February 1.

Iowa Retail Hardware Dealers' Association.

In our last issue in connection with a circular mentioning some of the troubles of the retail Hardwareman we published the programme for the annual meeting of the Iowa Retail Hardware Dealers' Association at Des Moines, Iowa, on February 14, 15 and 16. The following circular, gotten up in the form of a neat folder, has also been issued under date 16th inst., by Mrs. Kupper of Burlington, secretary:

You are cordially invited to attend the second annual meeting of the Iowa Retail Hardware Dealers' Association, which will be held in the city of Des Moines, at the New Auditorium, on Wednesday, Thursday and Friday, February 14, 15 and 16, 1900.

This meeting promises to be excellent, as matters of general interest and importance to the Hardware trade, and not heretofore considered by the association, will come up for discussion and settlement.

A large attendance of Hardwaremen from all parts of the State, as well as from other States, is assured. It is a good thing to meet together and discuss matters pertaining to the business in which every Hardware dealer is vitally interested.

The programme committee is making a special effort to make our stay in Des Moines a pleasant one, and you will never regret the time and money spent in attending this meeting, as it is expected that much interest and profit is in store for those who avail themselves of the opportunity thus offered. The matter of department stores and catalogue houses will come up for discussion and consideration; also a Question Box will be an important feature of this meeting.

If you are not now a member of the association, we trust that you will soon become one, and assist in promoting the good work which the association is carrying on.

Special rates will be granted on all railroads to those who desire to attend, and also reduced rates at Hotel Savery. We hope to see you there.

North Dakota Retail Hardware Association.

The indications are that the coming annual gathering of the North Dakota Retail Hardware Association at Fargo, February 21 and 22, will be much more largely attended than previous conventions. From localities in the State which have heretofore ignored the association applications are coming in from merchants who are desirous of affiliating with the organization and taking an active part in its good work, and we are advised by C. N. Barnes of Grand Forks, the efficient secretary, that not a single county in the State where an exclusive Hardware dealer is to be found is now unrepresented in the association. In most counties more than half the Hardware merchants are identified with the association, and in quite a number every dealer is a member, so that the organization contains a very large proportion of the

Hardwaremen of the State. The association is thus a very strong and influential one.

During the past week an arrangement has been effected with the railroad companies by which those attending the meeting will be able to do so at a reduced fare.

During the convention papers will be read prepared by H. S. Diesem, La Moure; H. N. Joy, Hamilton; H. F. Strehlow, Casselton; W. H. Pinkerton, Lakota; G. H. Wolbert, Fargo, and several others not yet determined.

Headquarters for the association have been secured at the Waldorf, though the sessions of the convention will be held in Loyal Knight Hall.

Intimations have already been received from several manufacturers that they will have representatives on hand, indicating the interest with which the meeting is regarded by them.

Ohio Hardware Association.

The Ohio Hardware Association will hold its annual convention at Cleveland, beginning on February 28 and lasting three days.

The event is looked forward to with great interest by the trade in Cleveland, there being much gratification owing to the fact that the city was selected as the place for holding the convention. The manufacturers and jobbers of the city are enthusiastic and are arranging an elaborate programme for entertaining the delegates. About 40 of the leading manufacturers and jobbers of the city have contributed liberally to a fund for making the occasion an agreeable and notable one.

The chairman of the Committee on Entertainment is C. S. Van Wagoner of Van Wagoner & Williams Hardware Company; W. M. Colwell of the Ferro-Steel Company, first vice-chairman; H. F. Lyman of the Upson & Walton Mfg. Company, second vice-chairman; J. O. Liddle of the Lockwood-Taylor Hardware Company, third vice-chairman, and M. A. Habens of the Cleveland Chamber of Commerce, secretary.

The Chamber of Commerce of Cleveland is a beautiful structure, which has ample accommodations to do justice to such an occasion, and will be utilized for this purpose. It has a fine banquet room and hall for meetings and has a number of rooms suitable for committee purposes.

The Cleveland interests are strong in their desire to strengthen the Ohio Retail Hardware Association by stimulating as large an attendance as possible.

The Colonial Hotel has been selected for housing the delegates.

Illinois Retail Hardware Dealers' Association.

Arrangements are progressing for the annual meeting to be held at Peoria on February 27 and 28 and March 1, and returns so far received point to a very successful meeting in every respect.

The headquarters will be at the Fey Hotel, where reduced rates have been secured. The sessions of the convention will be held within a square from the hotel, and every accommodation is being made for the reception of the visitors.

The railroads have granted a fare and a third for the round trip.

The local association of retail dealers will tender a banquet to the visiting merchants, and will provide other entertainment for the delegates between the sessions.

Information in regard to the meeting or the association will be cheerfully furnished by Lewis M. Reeves, secretary, Peoria, Ill.

East Tennessee Retail Hardware Dealers' Association.

The tenth semiannual meeting of the East Tennessee Retail Hardware Dealers' Association was held on Thursday and Friday of last week at Knoxville, headquarters being at the Hotel Imperial. After an address by President McCaslin of Sweetwater, former president John W. Bayless of Athens read a paper on "Organization." A discussion followed on the subject of the present high prices of Hardware and related goods, especially as to the policy which the retailer should pursue. On Friday the question of admitting Implement dealers to membership in the association came up, after which a paper was presented entitled "Does not the Retailer Make a Mistake in Striving to do Volume of Business Rather than Looking for Net Profit?" A general discussion followed on the work of the association and plans for the present year.

Saint John Iron and Hardware Association.

The sixth annual dinner of the Saint John (N. B.) Iron and Hardware Association was held at the Royal Hotel, in that city, on the 16th inst. The following were the toasts of the evening: "The Queen," "Our Association," "Our Sister Associations," "The City of St. John," "The Iron and Hardware Manufacturers," "Our Guests," "The Ladies." The occasion was thoroughly enjoyed by all present. Robert B. Emerson of Emerson & Fisher is president of this association, and John J. Barry secretary.

Trade Items.

THE firm of Hermann Boker & Co., 101-103 Duane street, New York, consisting of Carl F. Boker and Albert H. Funke, general partners, and C. H. Alfred Boker, special partner, expired by limitation December 30, 1899. Carl F. Boker will continue the business of the firm in Steel and Metals, Cutlery and Hardware, as at present (and according to friendly agreement), under the old firm name of Hermann Boker & Co. Frederick Schumacher will continue to sign the firm name as heretofore. Hans R. Boker, Charles H. Hawkins and Charles ter Meer, jointly, or any two of them, will also have authority to sign. A. H. Funke will continue under his own name, at the same address, 101-103 Duane street, New York, the business of the Gun department, including Bicycle Sundries, formerly conducted by the firm of Hermann Boker & Co. He will assume all contracts and orders relating to the Gun department.

THE AMERICAN SHOVEL COMPANY, now building a plant at New Castle Ind., will change their name to the Indiana Shovel Company.

H. G. HOLLIS, Eastern manager of the New York branch of the Lufkin Rule Company, 290 Broadway, has just returned from a business visit to the works at Saginaw, Mich. One of the objects of the journey was a conference with the company officials and two of their Western salesmen, S. B. McGee and W. D. Almy. A pleasing social feature of the journey was a fine banquet at the Saginaw Club, given by Fred Buck, vice-president, and Theodore Huss, secretary and treasurer of the company, to Mr. Hollis, which, with other substantial considerations, was in recognition of his services, the salesmen named above and the head of the office force being included in the party.

G. M. AVERY & Co., 161 Lake street, Chicago, issue a folder for 1900, giving a list of factories for which the firm are confidential representatives. These firms are as follows: E. T. Mason & Co., Chicago, Ice Cream Freezers; O. D. Woodruff, Pottstown, Pa., Meat and Food Choppers; A. S. Anderson, Galva, Ill., Lawn Rakes; the Horton Mfg. Company, Fort Wayne, Ind., Washing Machines and Corn Planters; Hoeffler Mfg. Company, Stevens Point, Wis., Potato Planters; Clyde Cutlery Company, Clyde, Ohio, Butcher Knives, Pruning Shears, &c.; E. C. Atkins & Co., Indianapolis, Ind., Saws; Tileite Paint & Varnish Company, Paint for wood and metal.

Calendars, Holiday Greetings, &c.

FOSTER BROS. MFG. COMPANY, manufacturers of Bedsteads, Mattresses, Divans, &c., Utica, N. Y.: Large hanger calendar.

CANADA HORSE NAIL COMPANY, Montreal, Canada: Neat desk calendar.

HENDRICKS & CLASS, 150 Nassau street, New York, export agents for Cincinnati Coffin Company: Daily calendar and memorandum book.

J. S. MITCHELL & Co., Iron and Hardware merchants, Sherbrooke, P. Q.: Neat leather card case inclosing memorandum book.

Among the Hardware Trade.

Flanigan-Evans Hardware Company are successors to J. P. Flanigan's Sons, Statesville, N. C. The company have been incorporated and will continue the wholesale and retail business in Hardware, Stoves, Tinware, Farming Implements, Sporting Goods, &c. Improvements are being made in the store, including a new office. The business was established in 1858.

The Hardware and furniture establishment of Victor C. Meyer, at North Platte, Neb., was destroyed by fire on the 2d inst. Loss, $11,000; insurance, $6500.

F. H. Blunck has purchased the business of O. F. Blunck, Moorland, Iowa.

The store of George Wilson, Florence, Colo., was robbed of $175 worth of Pocket Cutlery, Revolvers and Razors on the 2d inst. Several days later the thief commenced a fourteen-year term in the penitentiary.

J. C. Webb of Knoxville, Ill., is successor to James Donn's general Hardware, Stove, Farm Implement and Sporting Goods business at Canton.

J. H. Glover, formerly with Thomas K. Carey & Bros., and H. C. Glover, formerly with Anderson & Ireland, have just opened up in the Hardware and Engineers' Supply business at 114 Light street, Baltimore, Md. The style of the firm is Glover Bros.

Union Star Hardware Company have succeeded Piper & McLain at Union Star, Mo.

S. T. Rhode, dealer in Hardware and furniture, Randolph, Iowa, has sold out to G. W. Lamb.

Stenerson & Reisteigen have purchased the Hardware business of Louis P. Slattum, at Erskine, Minn.

Geo. W. Reed has bought the Hardware and Farm Implement stock formerly carried by C. H. Smith, Stanwood, Mich.

Strahle & Davis have succeeded Strahle Bros. in the Agricultural Implement business at Gothenburg, Neb.

De Wane Bros. are successors to F. W. Kriwanek, dealer in Hardware and Farm Implements, Cooperstown, Wis.

Olcott & Shank, general Hardware, tinning and plumbing, Walton, N. Y., have dissolved by mutual consent. S. P. Olcott will continue under his own name.

James L. Hollenbeck & Bro. have succeeded James L. Hollenbeck, dealer in Farm Machinery, Harness, &c., Mansfield, S. D.

Geo. W. French has purchased the Hardware stock of H. H. Rowe, Elk Point, S. D., and expects to make additions to it.

McKinney & Ward, Pine Bush, N. Y., have lately completed a new building for their business and are now in possession. They have also established a branch store at Bloomingburgh.

Miller & Shaw, Sanborn, N. D., have dissolved, and Henry Miller is continuing under his own name.

The store of H. M. Green, Ridgeton, Ont., was lately destroyed by fire.

Corbin & Bates have purchased Lewis T. Hooker's Hardware store at Angelica, N. Y.

Hungerford & McClune have purchased the Hardware, Stove, Farm Implement and Sporting Goods business of J. Jartzell & Son, Keswick, Iowa. The new firm expect soon to commence the erection of a new building for their own use.

E. T. Jervey, formerly with Beck & Gregg Hardware Company, Atlanta, Ga., has bought the Hardware business of Atkinson & Turner, West Point, Ga. Mr. Jervey will put in a complete line of Hardware and will carry in addition a good assortment of Engines and Mill Supplies.

R. W. Dillard has sold out his stock of Hardware in Midlothian, Texas, to S. J. Martin.

H. Pfeiffer & Son are successors to J. C. Peters & Co., Fort Wayne, Ind.

L. A. Ritter, Hutchinson, Minn., has taken F. W. Hartwig into partnership with him, and the style is now Ritter & Hartwig.

E. J. White & Son have succeeded to the Hardware business of E. J. White, Redwood, N. J.

The Gray Hardware Company, Coshocton, Ohio, have incorporated with a capital stock of $20,000. A wholesale and retail business is done in Shelf and Heavy Hardware, Paints, Oils, &c. Business is referred to as having doubled within the past three years.

J. H. Conley & Sons have succeeded J. H. Conley & Co., Shamokin, Pa.

Klusmire Bros., formerly at Blairstown, Mo., have removed to Holton, Kan., where they expect to engage more extensively in the Hardware and Agricultural Implement business.

Meyer-Neville Hardware Company, Meridian, Miss., have been incorporated with a capital stock of $100,000 by George W. Meyer, S. A. Neville, H. S. Gunn, Henry G. Meyer and Chas. W. Schamber. Messrs. Gunn and Neville—the former now in the Hardware business at Ellisville, which he will dispose of shortly in order to devote his time to the purchase of goods for the new store, and the latter with the Meridian National Bank—will manage the business. The company will soon commence the erection of a large three-story stone front structure for the accommodation of the business, and it is expected they will be ready to welcome customers by the first of May.

The Hardware store of C. S. Enger, Tacoma, Wash., was robbed of $35 worth of goods a short time since.

Boyer's Climax Step Ladder.

An illustration is herewith given of a ladder of new design and construction which has just been put on the market by the Goshen Mfg. Company, Goshen, Ind. Its construction is as follows: The steps are set in a groove in the risers and then supported by a board under every step which passes through the slot in the risers to which it is fastened to render it impossible for the ladder to

Boyer's Climax Step Ladder.

spread or the steps to get loose. The legs are strongly braced with rods and braces, which go through the legs, to which they are securely fastened to make it impossible for them to get loose, and, being on the inside of the legs, they are not only much stronger, but they are protected by the heavier parts, thereby lessening the liability of getting broken. The ears or hinges are made from galvanized steel and are secured to both the top and the risers, as well as the legs, by steel rivets, so that they can never get loose. The lock which holds the ladder from opening or closing when in use is made from steel, or steel and wood in the shorter lengths. It is secured by steel rivets and is hinged at the center. When in use the center drops below the ends, to prevent the ladder closing until the center is raised above the line where the ends are secured to the legs and risers. The manufacturers refer to the ladder as most durable and substantial.

The Dewey Lawn Mower.

The lawn mower illustrated herewith is put on the market by the Philadelphia Lawn Mower Company, Philadelphia, Pa. The mower is referred to by the manufacturers as medium priced, with four spiral knives, adapted to do very fine work, leaving a lawn smooth, without waves in the grass, while its cost is no more than the same grade of goods with three-blade

The Dewey Lawn Mower.

revolving cutters. It is made from entirely new patterns and all its parts are lettered and interchangeable, thus being easy to repair and replace. The mower is listed on the low list and is made in 10, 12, 14, 16 and 18 inch sizes. The makers guarantee it to give satisfaction.

Union Knife and Tool Grinder.

Union Mfg. Company, Buffalo, N. Y., and Mt. Forest, Canada, are making the Union knife and tool grinder, here shown. It stands 42 inches high, has ⅝-inch shaft, and carries an emery wheel 6 x ¾ or 1 inch wide, as preferred. As sent out, it is all connected and ready to screw to wall and floor for immediate use. It is especially recommended by the manufacturers for bicycle repair shops, small machine, jewelry, carpenter and butcher shops; also mills, for farmers' use, or any place where knives, scissors, tools or light grinding is required. Among the advantages pointed out by the makers are the fine cut gear, new positive ball clutch, that there are no belts to slip, that the bearings are large and well fitted, and that the grinder is mechanically correct.

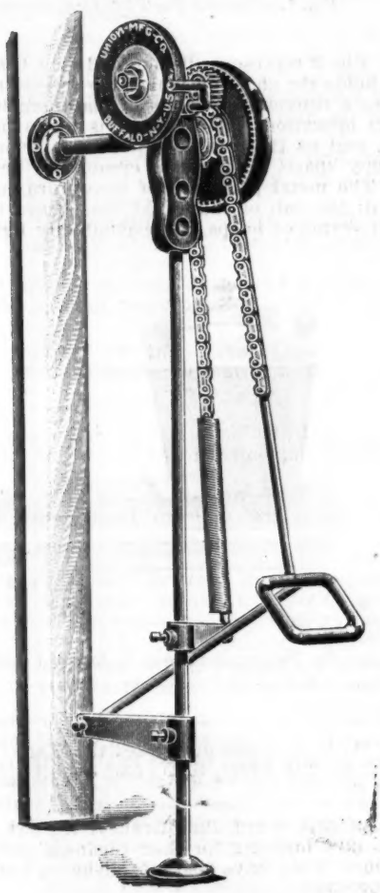
Improved Scraper Head for Coke Ovens.

Jenkins Iron & Tool Company, Bellefonte, Pa., represented by Surpless, Dunn & Co., 55 Warren street, New York, are offering the scraper head shown in the accompanying cut. The tool is not made with a solid rib at the back, it is explained, but the necessary strength and stiffness are given it by means of several corrugations, one of which extends well on toward the end, and

Improved Scraper Head for Coke Ovens.

two short ones around the bend or elbow. It is pointed out that the result of this form of construction is a scraper of lighter weight and of symmetrical design. The obvious advantage of reduced weight in a tool of this kind, which is used at the end of a long handle, is referred to. The manufacturers remark that by the method adopted they are enabled to produce a tool of uniform size and improved shape.

THE BALTIMORE SHOVEL & MFG. COMPANY, Baltimore Md., have been incorporated with a capital stock of $50,-



Union Knife and Tool Grinder.

000 and the following officers: Frank Guildener, president; John R. Korb, vice-president; Theodore Masterman, treasurer, and George L. Mowen, secretary and manager. The company will manufacture Shovels and Hardware Specialties, and expect to be in good shape to fill orders by February 20 next.

Ideal Ice Cream Freezer.

E. T. Mason & Co., 193-199 West Twenty-third street, Chicago, Ill., for whom C. M. Avery & Co., 161 Lake street, Chicago, are direct representatives, and W. H. Jacobus, 90 Chambers street, New York, Eastern agent, have put on the market the Ideal ice cream freezer, illustrated herewith. Fig. 1 shows the interior and working

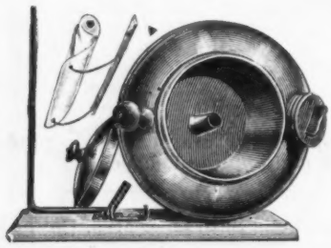


Fig. 1.—Can and Parts of Ideal Freezer.

parts. Fig. 2 represents it mounted on a board platform, which holds the shaft on which the freezer revolves, and provides a convenient means of clamping it to table or shelf in operation. The freezer is made in one size, 4 quarts, and as there is no intricate interior mechanism to occupy space, 4 quarts of cream can be frozen at a time. The metal parts are of heavy drawn steel plate, retinned; the tub of indurated fiber ware in one piece, without seams or hoops, correspondingly light in weight

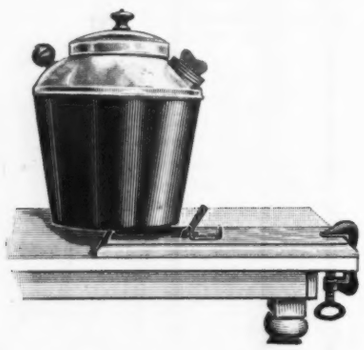


Fig. 2.—Freezer in Position to Receive Cream, &c.

from the nature of it, and finished a mahogany color. In use 15 pounds of ice is crushed and with 5 pounds of common rock or barrel salt placed in the outer compartment between tub and freezer through a 3-inch opening closed with a screw cap, which hermetically seals it against leakage of mixture or temperature. After the dasher and pin have been placed in position the preparation to be frozen is poured in, cover replaced and freezer tilted ready for the operation, as seen in Fig. 3. By means

Fig. 3.—In Position for Freezing.

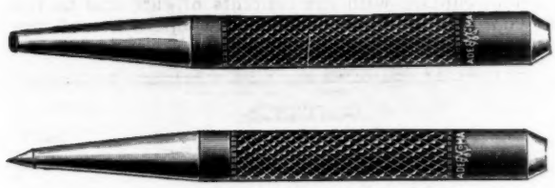
of the knob on the can breast the freezer is turned slowly, about 40 revolutions a minute, to the right, and, it is said, a quart of cream can be frozen in three minutes; two quarts in four minutes, three quarts in five minutes, etc. Revolving as it does on a shaft, turning the freezer requires little exertion. The well-known non-conducting qualities of wood fiber, thus keeping the cold in and the heated atmosphere out, are referred to as requiring much less ice and salt than customary and no repacking to keep the contents good for five hours or refreeze other mixtures is necessary. Special attention is drawn by the manufacturers to the tilting principle, by means of which is secured the displacement of the cream without intricate interior mechanism; to the fact that salt water cannot get in contact with the contents of can, and to the simplicity and ease and rapidity of operation of the freezer.

CONTENTS.

	PAGE.
The Most Perfect Machine Shop.—IV. Illustrated	1
The Menominee Range in 1900	3
Large Contracts for Blast Furnace Stoves	4
The Red River Iron Company	4
The Progress of the Mechanical Arts in Three-Quarters of a Century	5
Central Pennsylvania News	8
The Bliss Double Geared Press. Illustrated	9
The Department of Commerce and Industries	9
The H. W. Caldwell & Son Company	11
The Bischoff Clinched Pipe. Illustrated	11
Canadian News	12
The Statistical Position of Gold	12
The Armstrong Planer Tool. Illustrated	13
Pacific Coast News	13
The Jeffrey Century Belt Conveyor. Illustrated	14
An Artesian Well at Paris	14
Our Insular Dependencies and the Tariff	14
The R. D. Nuttall Company	15
Personal	15
Editorials:	
The Iron Age Paris Library	16
Where Co-operation is Needed	16
The Change in the Money Market	17
Stability of Railroad Rates	18
The Passing of the Link and Pin	18
The Chicago Drainage Canal	18
Automobiles at the New York Cycle Show	19
Information Wanted	19
Manufacturing:	
Iron and Steel	20
Machinery	20
Hardware	21
Miscellaneous	21
The Iron and Metal Trades:	
A Comparison of Prices	22
Chicago	22
Philadelphia	23
Cincinnati	24
St. Louis	25
Birmingham	25
Pittsburgh	26
Cleveland	27
New York	27
Metal Market	27
The New York Machinery Market	28
Obituary	29
England's Exports and Imports of Iron and Metals	29
Iron and Industrial Stocks	30
The Cincinnati Machinery Market	31
The Philadelphia Machinery Market	32
Our Enormous Pig Iron Production	33
Trade Publications	33
Hardware:	
Condition of Trade	34
Notes on Prices	35
Price-Lists, Circulars, &c	36
Getting on the Jobbers' List	37
Hardware Exhibits at the National Export Exposition. Ill.	38
Letters from the Trade	40
An American Manufacturer's Experience in the English Market	40
Request for Catalogues, &c	41
E. C. Atkins & Co.'s Catalogue	41
Hardware Organizations	42
Trade Items	43
Calendars, Holiday Greetings, &c	43
Among the Hardware Trade	44
Boyer's Climax Step Ladder. Illustrated	44
The Dewey Lawn Mower. Illustrated	45
Union Knife and Tool Grinder. Illustrated	45
Improved Scraper Head for Coke Ovens. Illustrated	45
Ideal Ice Cream Freezer. Illustrated	46
Nail Set and Punch. Illustrated	47
Banner Acetylene Carriage Generators. Illustrated	47
Revolving Display Stand. Illustrated	47
Hammocks, Accessories, &c. Illustrated	48
Wood Truing Device. Illustrated	48
Current Hardware Prices	49
Current Metal Prices	56

Nail Set and Punch.

The accompanying cuts represent a new line of nail sets, center and prick punches, put on the market by Braunsdorf-Mueller Company, Elizabeth, N. J. The articles are knurled extra deep to prevent them slipping



Nail Set and Punch.

from the fingers. The carbon finish relieved by the polished ends is referred to as imparting a handsome and attractive appearance.

Banner Acetylene Carriage Generators.

Plume & Atwood Mfg. Company, 29 Murray street, New York, have just put on the market the Banner acetylene carriage generators, as here shown. Fig. 1 il-

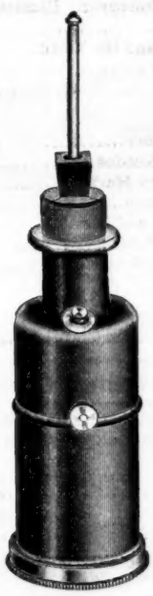


Fig. 1.—Banner Acetylene Carriage Generator.

lustrates the generator proper, ready to be introduced, with its charge, in a carriage lamp, as shown in Fig. 3, serving as a substitute for candle or other illuminant; the generator it is said, fitting any carriage lamp. Banner generator No. 1 is designed for light private carriages, runabouts, &c.; No. 2 being suitable for coaches, cabs, &c. No. 1 is made strongly of brass, finished in black enamel, nickel trimmed, and gives a continuous,

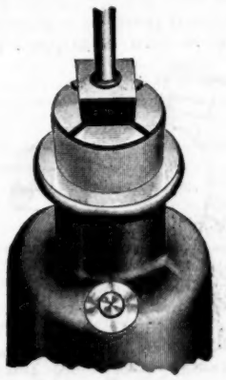


Fig. 2.—Showing Universal Retainer.

even light for four hours; No. 2 being similar in every way except in size, the capacity being eight to ten hours. In charging, the lower milled cap is unscrewed and a charge of carbide inserted, water being introduced at the upper opening, the thumb nut in the center regulating or cutting off the supply of water from the reservoir. Fig. 2 gives a sectional view of the Universal retainer, with

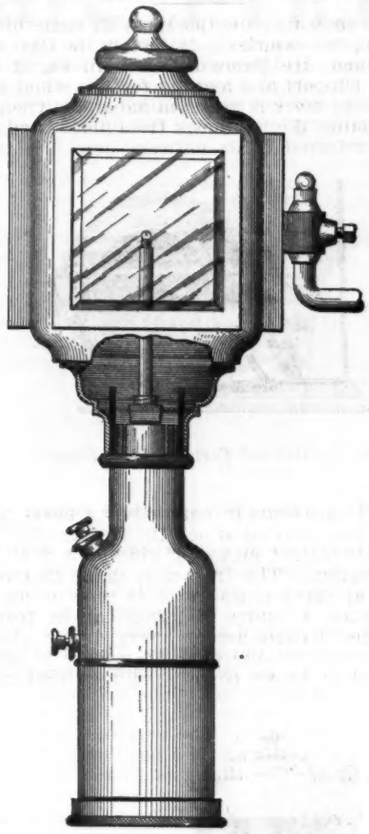
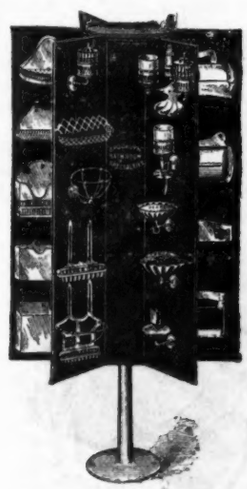


Fig. 3.—Generator as Affixed to Carriage Lamp.

an expanding plug by means of which it can be used in any carriage lamp.

Revolving Display Stand.

Silver & Co., Brooklyn, N. Y., are manufacturing the revolving display stand illustrated herewith, adapted especially for showing their Brooklyn bathroom specialties. The length of the stand is 6 feet, and its greatest diameter is 30 inches. It is equipped with eight revolving panels with 50 square feet of display surface, all mounted on a cast iron pedestal. These stands are sup-



Revolving Display Stand.

plied free of charge on certain conditions, which may be learned by communicating with the company.

Their line of Brooklyn bathroom specialties is shown in their No. 6 catalogue, issued under date of January 1. The line includes a variety of soap and sponge racks, tumbler and tooth brush holders, toilet paper holders, soap cups, towel holders, shower bath rings, robe hooks, match boxes, &c., of brass, nickel plated, also towel shelves, soiled towel baskets, bath sprays, tubular showers, bathtub seats, fountain shower sprays, and folding Turko-Russian bath cabinets, with heaters and vaporizers.

Hammocks, Accessories, Etc.

The cuts shown herewith represent some of the new hammocks and accessories contained in the 1900 catalogue of I. E. Palmer, Middletown, Conn. In Fig. 1 is shown a hammock support and awning for use when a convenient location of trees is not obtainable, or when it is desirable to change the hammock from place to place. The support is referred to as entirely new in most of its

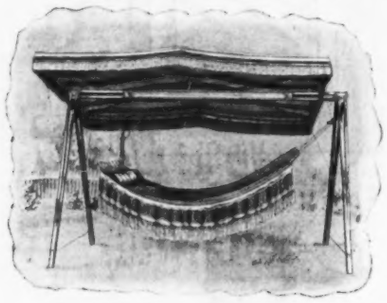


Fig. 1.- Hammock Support and Awning.

features, as easily set up and taken apart, requiring but a minute for the operation. The overhead rail of the support is extensible, ranging within its scope from 6 feet 3 inches to 11 feet, thus accommodating various lengths of hammocks and also giving different degrees of dip and hights from the ground. The hammock awning is spoken of as an entirely new arrangement, the manner of closing being just opposite to that of the umbrella principle. It can be quickly opened and set upon or taken off the support. The awning tilts either side so as to permit its being put in a position in keeping with the declining sun. The tilting is governed by a thumb

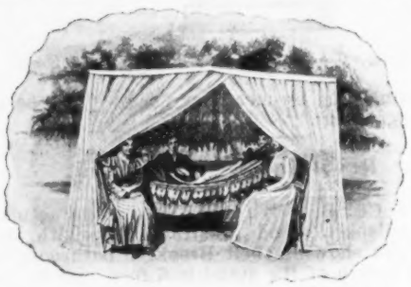


Fig. 2.—Mosquito Net Canopy.

screw. A mosquito canopy may be added to the foregoing combination, as shown in Fig. 2. This, entirely covering the support and awning, and being generous in size, will accommodate a number of people. The awning nets are made in white, light green, buff and slate colors, and are referred to as forming an ornamental piece for a lawn.

A hammock in connection with a Utopia hammock seat is shown in Fig. 3. The seat is composed of sides and slats, with ropes from an extra ring connecting

Fig. 3.—Hammock with Utopia Seat.

with the front of the seat, permitting adjustment of the seat and foot portion of the hammock. The seat is designed for extreme comfort, conforming closely to the natural position of the body. The combination shown in Fig. 3 is suggested as a fine equipment for the seashore. The seat is also shown for yacht use in Fig. 4.

A different style canopy from that shown in Fig. 2 is represented in Fig. 5. It can be used with any sized hammock, and is made of very fine sand fly netting, both in white and colors. It is open at the bottom for ingress and egress. After occupying the hammock a pursing

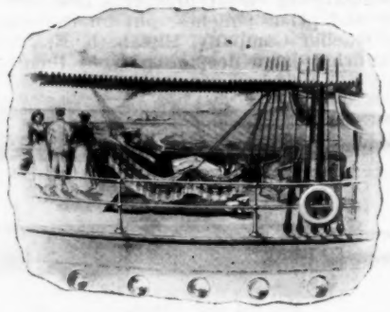


Fig. 4.—The Utopia Seat for Yacht Use.

string is drawn together, entirely closing the opening and leaving the canopy free from the ground, excluding in-

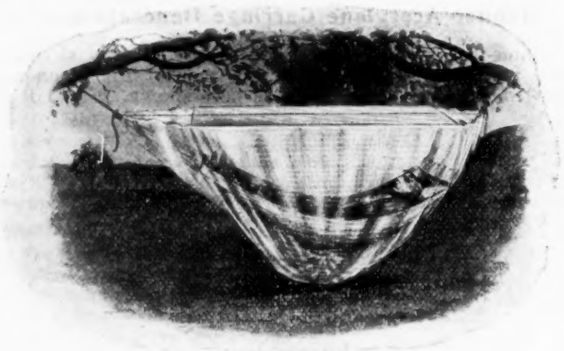


Fig. 5.—New Hammock Canopy.

sects and vermin, flying or crawling. The canopy is designed particularly for army and campers' use.

Wood Truing Device.

L. Wood & Son, Stamford, Conn., are the manufacturers of a convenient and inexpensive tool for truing a bi-

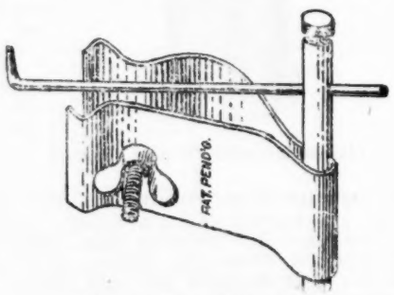


Fig. 1.—Wood Truing Device.

cycle wheel, known as the Wood truing device, and here illustrated. The wire sliding gauge, 4¼ inches long, is fastened at any desired point by a thumb screw in the top of a post, which in turn is gripped by a flat steel

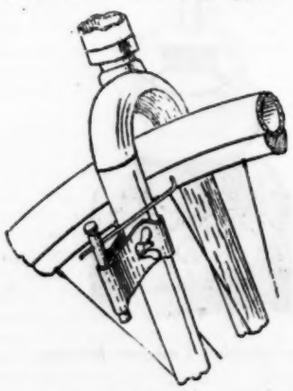


Fig. 2.—Method of Using It.

spring 1 inch wide and 3¼ inches long, which is clamped to either fork by thumb nut and bolt. It is intended for repair men or riders.

Current Hardware Prices.

REVISED JANUARY 23, 1900.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—
Domestic, ₱ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—
Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....₱ lb 7¼@7¾¢
Hay-Budden, Wrought.....9@9¼¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson.....₱ lb 7¾@8¢
Trenton, Wrought.....₱ lb 8¾@8¾¢

Imported—
Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9½@9¾¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—
*Common Double Spur.*60&10&10@70%
Boring Machine Augers......60&10&10@70%
*Car Bits, 12-in. twist*60&10@60&10&10%
Jennings' Pattern:
Auger Bits......60@60&10%
Ford's Auger and Car Bits...40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 exc. lip. R. Jennings' list.....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50%
Snell's Car Bits, 12-in twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—
Standard List......65&10@70%

Expansive Bits—
Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $26; No. 2, $18...40@40&5%
Swan's.....60%

Gimlet Bits—
Common Double Cut..gro. $3.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists......50&5@50&10%

Hollow Augers—
Ames.....25&10%
Bonney's Adjustable, ₱ doz.....$16.00
New Patent.....25&10%
Universal.....20%

Ship Augers and Bits—
Ford's.....40%
Snell's.....40%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&5%

Awl Hafts, See *Hafts, Awl.*

Awls—
Brad Awls:
Handled......*gro. $2.75@3.10*
Unhandled, Shouldered gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
First Quality, best brands.$6.00@6.25
First Quality, other brands$5.50@5.75
Jobbers' Special Brands:
Good Quality.....$5.25@5.50
Best Quality.....$6.00@6.50
Cheap, Handled Axes.....$4.75@5.00
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	*Steel.*	
Concord, loose collar	*6¼c*	*6 c*	2% cash 10 days.
Concord, solid collar	*6¾c*	*6¾c*	
No. 1 Common	*5 c*	*4¾c*	
No. 1½ Com. New Style	*5½c*	*5¼c*	
No. 2, Solid Collar	*5¾c*	*5½c*	

Nos. 7, 8, 11 to 14......50&10%
Nos. 7, 8, 11 to 14, 100 sets......60%
Nos. 15 to 18......50%
Nos. 19 to 22......60&10%

Boxes, Axle—
Common and Concord, not turned..
lb. 5c
Common and Concord, turned..lb. 6c
Half Patent......*lb. 9c*

Balances—
Sash—
Caldwell new list.....50%
Pullman's.....62½%

Spring—
Spring Balances......50@50&5%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb., per lb...
4@4½c

Beams, Scale—
Scale Beams, List Jan. 12, '82......
30@30&5%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters— Egg—
Standard Co.:
No. 5 Steel Handle Dover, ₱ gro. $6.50
No. 10 Cast Handle Dover..₱ gro. $8.00
No. 10 Steel Handle Dover.₱ gro $8 00
No. 15 Extra Heavy Steel Handle, ₱ gro. $15.00
Rival, ₱ gro.....$10.00
Taplin Mfg. Co.:
₱ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size, tinned.....$9.50
No. 150 Large Family size.....$10.00
No. 152 Large Family size, tinned.....$17.00
Lyon's, Standard size.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ gro. $7.50

Bellows—
Blacksmith—
Standard List......*70@70&5%*

Net Prices.

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each	*$3.70*	*3.95*	*4 55*	*5.10*	*5.70*	*6.55*

Extra Length:

Inch..	*6*	*7*	*8*	*9*	*10*	*12*
Each	*$4.25*	*4.85*	*5.40*	*5.95*	*6.80*	*7.95*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.75*	*6.75*

Bells— Cow—
Ordinary goods......*75&10%*
High grade......*70@70&10%*
Jersey.....75@75&10%
Texas Star.....50&10%

Door—
Gong, Yankee.....55%
Horse, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....33⅓&10%

Hand—
Hand Bells, Polished......*65@65&10%*
White Metal......*65@65&10%*
Nickel Plated......*50@50&10%*
Swiss......*60@60&10%*

Miscellaneous—
Farm Bells......*lb. 2@2½c*
Steel Alloy Church and School......
50&10@60%
Wilmot & Hobbs Mfg. Co, Gongs.....70%

Belting
Rubber—
Common Standard......*70&10@75%*
Standard......*60&10@70%*
Extra......*60@60&10%*
High Grade......*60@60&10%*

Leather—
Extra Heavy, Short Lap......
50&10@50&10&5%
Regular Short Lap......*60@60&10%*
Standard......*60&10@60&10&5%*
Light Standard......*70%*

Cotton—
Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters.....20%
Ill. Iron & Bolt Co.....40@40&5%
Stoddard's Lightning Tire Upsetters...40@50%

Bicycle Goods—
Lane's Cycle Hanger.....33⅓&5%
John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks— Tackle—
Common Wooden......*70@70&10%*
Eddy's Steel.....60&10%
Hartz Steel.....50&10%
Ford's Star Brand Self Lubricating.....60&10%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50%
See also *Machines, Hoisting.*

Boards, Stove—
1899 List:
Zinc......*30%*
Crystal and Embossed......*40%*

Bolts—
Carriage, Machine, &c.—
Common, list Jan. 30, '95..45&5@50&10%
Norway Iron, $3.00, list Oct. 7, '84...
75@75&10%
Phila. Eagle, $3.00 list......
75&10@75&10&5%
Bolt Ends, list Jan 30, '95......
50&5@50&10&5%
Machine, list Oct. 1, '99..5.....
50&5@50&10&5%
NOTE.—*Jobbers' prices on Bolts are now generally lower than manufacturers'.*

Door and Shutter—
Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.33*	*.36*	*.45*	*.57*	*.80*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.85*	*1.20*	*1.50*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.60*	*.90*	*1.15*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz	*$0.44*	*.50*	*.61*	*.70*	*1.23*

Wrought Barrel.....70@10@75&5%
Wrought " Bronzed.40&5@50&10%
Wrought Flush. B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....62½@62½&10%

Stove and Plow—
Plow......*50&10@60%*
Stove......*60@60&10*

Tire—
Common......*57@57&10*
American Screw Company:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....72½%
Bay State, list Feb. 28, '83.....57%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....72½%
Eclipse, list Feb. 28, '83.....57%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....57%
Keystone Phila., list Oct. '84.....72½%
Norway Phila., list Oct. '84.....70%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1¼*	*1¾*	*2*
Per doz..	*$3.50*	*4.50*	*5.00*	*6 50*
Inch			*2¼*	*2½*
Per Doz.....			*$7 50*	*10.25*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25@30%

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—
Seavey's, per doz., $30.....40%

Braces—
NOTE.—*Most Braces are sold at net prices.*
Common Ball, American..$1.10@1 20
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....50&10@60%

Brackets—
Cast Iron, plain......*60&10@70&10%*
Wrought Steel......*70&10@75%*
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—
Wire Goods Co.....70@70&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—
Hoosier.....₱ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts— Brass—
Wrought list Sept., '96...25&5@33⅓&5%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad......*50@....%*
Fast Joint, Narrow......*50@....%*
Loose Joint......*66⅔&5@70&10%*
Loose Pin......*66⅔&5@70&10%*
Mayer's Hinges......*66⅔&5@70&10%*
Parliament Butts......*66⅔&5@70&10%*
NOTE.—*Jobbers often undersell manufacturers.*

Wrought Steel—
Loose Joint......
Table and Back Flaps..
Narrow and Broad......
Inside Blind......
Loose Pin......
Loose Pin, Ball and Steeple Tip
70&5@70&10%
Bronzed Wrt. Nar. and Inside Blind Butts......*50&10@50&10&5%*

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks- Toe and Heel—
Blunt......*per lb. 5 @5¼c*
Sharp......*per lb. 5½@5¾c*
Perkins' Blunt.....₱ lb 4¼¢
Perkins' Sharp.....₱ lb 5½¢

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:	5	8	10 gal.
		$3.60	$4.00..33⅓%
Illinois Pattern.	$2 40	3.10	3.50..33⅓%
Iowa Pattern...	2.40	3.95	3.75..33⅓%
	20	30	40 qt.
New York Patt'rn	3.00	4.35	4.60..33⅓%
Baltimore Pat'rn	3.10	4.45	4.70..33⅓%

Cans, Oil—
Galvanized Blue Band, 1-gal., ₱ doz. $1.75@$2.00
S. S. & Co., Galvanized Family with faucet, 3-gal., ₱ gro. $54, 5-gal., $63; 10-gal., $120.00
Glass Oil.....₱ doz. $1.90@$2.20

Caps—Percussion—
Eley's E. B......*50c*
G. D......*per M 32@34c*
F. L......*per M 57@60c*
G. E......*per M 47@50c*
Musket......*per M 57@60c*

Primers—
Berdan Primers, $1.00......*5%*

B. L. Caps (Sturtevant Shells) $1.00 ..... 5%
All other primers ..... *$1.10@$1.15*

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges
B. B. Caps, Con., Ball Swgd. *$1.90*
B. B Caps, Round Ball... *$1.12@1.18*
Blank Cartridges:
32 C. F., $5 50 ..... 10c5%
38 C. F., $7 00 ..... 10c5%
22 cal. Rim, $1.50 ..... 10c5%
32 cal. Rim, $2.75 ..... 10c5%
Central Fire 25%
Pistol and Rifle 15c5%
Primed Shells and Bullets 15c5%
Rim Fire Sporting 50%
Rim Fire, Military 15c5%

Casters—
Bed ..... 60c10% } Extra 10% often given.
Plat ..... 60c10% }
Plate, part Brass. ... 50c10% }
Philadelphia ..... 60c10% }
Martin's Patent (Phœnix) ..... 50@10%
Payson's Anti-friction Furniture. 70&10%
Payson's Anti-Friction Truck ... 70&10%
Standard Ball Bearing 45%
Tucker's Patent, low list 45%

Cattle Leaders—
See *Leaders, Cattle.*

Chain—
American Coil, Full Casks:

3-16	¼	5-16	⅜	7-16	½	9-16
8.75	6.85	5.85	5.00	4.85	4.75	4.65
⅝	¾	⅞	1 inch.			
4.55	4.50	4.50	4.50 cents per lb.			

Less than Cask lots add ¼@½c per lb.
German Coil, list July 24, '97 .....
60c10@60c10c10%
German Halter Chain, list July 24, '97 ..... 60c10@60c10c10%
Trace, Wagon and Fancy Chains, list April, '98 ..... 50c10@50c10c5%
Jack Chain, list July 10, '98:
Iron ..... 60c5@60%
Brass ..... 60c5@60%
Gal. Pump Chain ..... *lb. 5¼@5¾c*
Breast, Hitching and Rein Chains.
Covert Sad. Works 50%
Covert Mfg. Co.:
Breast ..... 35&2%
Halter ..... 35&2%
Heel ..... 35&2%
Rein ..... 35&2%
Stallion ..... 35&2%
Oneida Community:
Eureka Coil and Halter ..... 60@60&5%
Niagara Coil and Halters ..... 60@60&5%
Niagara Cow Ties ..... 45&5@45&10&5%
Am. Coil and Halters ..... 50&10&5@60%
Am Cow Ties ..... 35&5@40&5%
Wire Goods Co.:
Dog Chain 60%
Universal Dbl-Jointed Chain 45%

Chalk—(From Jobbers.)
Carpenters', Blue ..... *gro. 45c*
Carpenters', Red ..... *gro. 55c*
Carpenters', White ..... *gro. 30c*
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's ..... 40&10%
Columbus ..... 50&10%
Eclipse ..... 60@60&10%

Chisels—
Socket Framing and Firmer
Standard List ..... *70c10c2½@75c5%*
Buck Bros 30%
Charles Buck 30%
Swan's ..... 70&10&2½%
L. & I. J. White ..... 30@30&5%

Tanged—
Tanged Firmers ..... *40c5@40&10%*
Buck Bros 30%
Charles Buck 30%
L. & I. J. White, Tanged ..... 25&5%

Cold—
Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality ..... *lb. 12c*
Cold Chisels, ordinary ..... *lb. 8@9c*

Chucks—
Beach Pat., each $8.00 ..... 20%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks, Patent and Standard 30%
Drill Chucks, New Model ..... 2 %
Independent Lathe Chucks 40%
Improved Planer Chucks 20%
Universal Lathe Chucks 40%
Vise Plate Jaws 35%
Union Mfg. Co.:
Combination 40%
Czar Drill 30%
Geared Scroll 30%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—
Adjustable, Hammers' ..... 20@20&5%
Adjustable, Stearns' 30%
Cabinet, Sargent's ..... 45&10%
Carriage Makers', P., S. & W. Co.. 40&10%
Carriage Makers', Sargent's ... 50&10%
Beaver, Parallel ..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Walk—
Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net

Cleavers, Butchers'—
Foster Bros 30%
New Haven Edge Tool Co.'s .. 40@40&5%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb 35%
P., S. & W ..... 33⅓&5@33⅓&10%
& I. J. White 25%

Clippers—
Chicago Flexible Shaft Company
Handy Toilet ..... ₱ doz. $7.20
Mascotte Toilet ..... ₱ doz. $8.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips, Axle—
Eagle and Superior ¼ and 5-16 inch ..... *65c10@70%*
Norway, ¼ and 5-16 inch... *65@65c5%*

Cloth and Netting, Wire
—*See Wire, &c.*

Cocks, Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) .....
60c10@60c10c10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather, Pope & Stevens' list 40%

Compasses, Dividers, &c.
Ordinary Goods ..... *70c10@75%*
Bennis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double ..... 65&10%
Calipers, Inside or Outside ..... 65&10%
Calipers, Wing 60%
Compasses ..... 50&5%
J. Stevens A. & T. Co ..... 25&10%

Conductor Pipe, Galvanized—

	Carload.	L. C. L.
Territory.	*Loose.*	*Nested.*
Eastern	*60c25c5%*	*60c20c2½%*
Central	*60&25c2½%*	*60c17½%*
Southern	*60c20c5%*	*60c15%*
S. Western	*60c20%*	*60c12½%*

Terms, 2% for cash.
See also *Eave Trough.*

Coolers, Water—
S. S. & Co.: 2-gal., $14.00; 3-gal., $16.00; 4-gal., $18.50; 6 gal., $23.00.

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Drab ..... *lb. 22@25c*
Braided, White, Common, .. *lb16@18c*
Cable Laid Italian...lb. A, 18c; B, 16c
Common India ..... *lb 8¼@9½c*
Cotton Sash Cord, Twisted ... *12@16c*
Patent Russia ..... *lb. 12 @13c*
Cable Laid Russia ..... *lb. 13½@14c*
India Hemp, Braided ..... *lb 14@15c*
India Hemp ..... *lb. 10@12c*
Patent India ..... *lb.1 0@12c*
Pearl Braided, cotton ..... ₱ lb 16&18¢
Massachusetts, White ..... ₱ lb 20¢
Massachusetts, Drab ..... ₱ lb 24¢
Eddystone Braided Cotton ..... ₱ lb 19¢
Har mony Cable Laid Italian ..... ₱ lb 18¢
Ossawan Mills:
Crown, Solid Braided White ... ₱ lb 18¢
Braided, Giant, White ..... ₱ lb 17¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Phœnix, White ..... 18¢
Samson:
Braided, Drab Cotton ..... ₱ lb 31¢
Braided, Italian Hemp ..... ₱ lb 31¢
Braided, Linen ..... ₱ lb 44¢
Braided, White Cotton, Spot ... ₱ lb 27¢
Silver Lake:
A quality, Drab, 40¢ 15%
A quality, White, 35¢ 15%
B quality, Drab, 35¢ 15%
B quality, White, 30¢ 15%
Italian Hemp, 40¢ 15%
Linen, 57½¢ 15%

Wire, Picture—
Braided or Twisted ..... *70@70c5%*

Corn Knives and Cutters
—*See Knives, Corn.*

Crackers, Nut—
Little Giant ..... ₱ gr. $24.00
Turner & Seymour Mfg. Co 50%

Cradles—
Grain *50%*

Crayons—
White Round Crayons, gross...5@6c
Cases, 100 gro., $4.50@5.00, at factory.
Metal Workers' Crayons ... gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling Mill Crayons ..... gr. $2.50
Railroad Crayons (composition). gr. $2.00
Case lots 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden ..... ₱ doz. $10.00

Cutters—
Glass—
Smith & Heminway Co 30%

Meat—
American 30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Connecticut:

No.	0	1	8	10	12
each	$1.75	2.25	3.00	3.00	3.50

Enterprise ..... 25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz ..... 33⅓&10%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₱ doz ..... 60&10&10@70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ₱ doz. $26.00 ..... 60%
Little Giant, ₱ doz ..... 33⅓@33⅓&5%

Nos.	305	310	312	340	322
	$35.00	$48.00	$44.00	$73.00	$68.00

Miles' Challenge, ₱ doz ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00 .. 33⅓&5% 40%

Nos.	100	150
	$15.00	$18.00

Woodruff's, ₱ doz 40%
Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—
Henry Dies'on & Son's:
Slaw, Corn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 .55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 50@50&10%
Slaw Cutters, 1 Knife, ₱ gr. ... $15@$18
Slaw Cutters, 2 Knife, ₱ gr. ... $20@$27

Tobacco—
All Iron, Cheap ..... *doz. $4.25@$4.50*
Enterprise ..... 25@30%
National, ₱ doz. $31.00 ..... 40%
Sargent's, ₱ doz. $24.00 ..... 50@60&10%

Washer—
Appleton's, ₱ doz. $16.00 ..... 60&10@60&10&10%
Bonney's ..... ₱ doz. $4.75

Diggers, Post Hole, &c.—
Iwan's Improved Post Hole Auger ... 40%
Iwan's Perfection Post Hole Digger ... ₱ doz. $10.00
Never-Break Post Hole Diggers, ₱ doz. $24.00 ..... 60%
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.75@$2.00
Blacksmiths' Self-feeding.....each $3.75@4.00
Bench Drills, Stearns' 50%
Breast, Milliers Falls, each $3.00 .. 15&10%
Breast, P., S. & W ..... 30@30&10%
Goodell Automatic Drills..40&5@40&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's, P. S. & W ... 40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓&5%

Twist Drills—
Standard List ..... *65@65c10%*

Drill Bits or Bit Stock

Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9.. 40%
Buck Bros 30%
Buck Bros' Screw Driver Bits 37½%
Champion ..... 40&10%
Douglass Mfg. Co ..... 20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
New England Specialty Co ..... 50&10%
Sargent & Co.'s:
Nos. 1,50,55 and 60.50&10@50&10&10%
Nos. 20 and 40 ..... 66⅔@66⅔&10%
Screw Driver Bits ..... ₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 60&10%
No. 86 ..... 70&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 20&10&10%

Eave Trough, Galvanized

Territory.	*Carload.*	*L. C. L.*
Eastern	*75c15%*	*75c10%*
Central	*75&12½%*	*75c7½%*
Southern	*75c10%*	*75c5%*
S. Western	*75c2½%*	*75%*

Terms, 2% for cash.
See also *Conductor Pipe.*

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 54 to Flour, CF*

	46 gro.	*180 gro.*	*F.FF*
Kegs	*lb. 4½c*	*5 c*	*5 c*
½ Kegs	*lb. 4¾c*	*5¼c*	*5¼c*
¼ Kegs	*lb. 5 c*	*5½c*	*5½c*
10-lb cans, 10 in case	*6 c*	*6½c*	*5½c*
10-lb. cans, less than 10	*10 c*	*10 c*	*8c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice
—*See Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's ..... 50&10%

Faucets—
Cork Lined ..... *70c5@70c10c5%*
Metallic Key, Leather Lined ..... *70@70c10*
Red Cedar ..... *50@50c5*
B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined .. 50%
John Sommer's Reliable Cork Lined. 50&10%
John Sommer's Common Cork Lined. 70%
John Sommer's Chicago Cork Lined. 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar ... 40%
Star ..... 60@60&5%
Star, Metal Plug new list ..... 40@40&5%
Lockport, Metal Plug, reduced list. 60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40%
Lane's, ₱ doz. $36.00 ..... 33⅓%
National Measuring, ₱ doz. $36.00... 40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands ..... *70@75%*
Good Brands ..... *75&5@75c10c5%*
Fair Brands ..... *75c10c5@80c5%*
Second Quality ..... *80c10@80c25%*

Imported—
Stubs' Tapers, Stubs' list, July 24, '97 ..... 25%

Fixtures, Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*	*24*
Per doz.	*$3.30*	*3.55*	*3.75*	*4.50*	*5 25*

Stowell's Giant Grindstone Hanger ... ₱ doz. $6.00
Stowell's Grindstone Fixtures 50%
P., S. & W. Co ..... 50&10&10%
Reading Hardware Co ..... 30&20&10%
Sargent's Patent ..... 60&10@60&10&10%

Fluting Machines—
See *Machines, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Aug. 1, 1899, list.
Hay, 2 tine *65%*
Hay, 3 tine *66⅔%*
Manure, 4 tine *70%*
Manure, 5 and 6 tine *70%*
Spading *70c5%*
Iowa Dig-Ezy Potato 65%
Victor, Hay 70%
Victor, Manure ..... 70&8%
Victor, Header ..... 70&12½%
Champion, Hay ..... 60&20%
Champion, Manure ..... 70&5%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading ..... 70&10%
Hawkeye Wood Barney 4 tine ₱ doz. $5.00; 6 tine, $6.00.
Plated.—See *Spoons.*

Frames—
Saw—
Red, Polished and Varnished..doz. $1.05@$1.10
White ..... *doz. 75@80c*

Screens and Frames—
See *Screens.*

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best.	*$1.40*	*1 60*	*1.85*	*2.30*	*3.00*	*3.90*
Good	*$1 25*	*1.35*	*1.70*	*2.05*	*2 65*	*3.50*
Fair.	*$1.00*	*1.10*	*1 30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.
Hemp Fuse	*$2.60*
Cotton Fuse	*2.90*
Single Taped Fuse	*3.50*
Double Taped Fuse	*4.70*
Triple Taped Fuse	*5.70*

Less 10%

Gates, Molasses and Oil—
Stebbin's ..... *80@80c10%*

Gauges—
Marking, Mortise, &c ..... *55c10@55c10c10%*
Barrett's Comb. Roller Gauge ..... ₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Rabbet Gauge ..... 20&10%
Wire, Brown & Sharpe's 5%
Wire, Morse's 2½%
Wire, P., S. & W. Co ..... 10@10&5%

Cimlets—
Nail, Metal, Assorted, gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3 50
Nail, Wood Handled, Assorted, gro. $4.00@4.50
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window
List Nov. 18, 1898.
Small lots from store:
Eastern ..... *80&10@80&20%*
Western ..... *80&10@80&20%*
From Jobbers or Factory, with Freight Allowance:
Carloads, Single Strength *90%*
Carloads Double Strength ... *90&10%*

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.) ..... *35%@45%*
List C, Cans (½ gal., gal.) .... *25@45%*

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Common Grade ..... *gro. $5.00@6.00*
Allerton's Axle:
1 lb Tins, ₱ gr. $9.00
3 lb Tin Pails, ₱ doz., $2.00; 5 lb, $3.00; 10 lb, $6.00.
25 lb wood pails ..... ₱ doz. $12.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs. ₱ doz. 1 lb $1.20; 2 lb $2.00

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top... $4.90@5.25
Peg Patent, Plain Top.... $3.50@3.75
Sewing, Brass Ferrule..... $1.50@1.60
Saddlers', Brass Ferrule.. $1.35@1.45
Peg, Common ..... $1.25@1.35
Brad, Common ..... $1.50@1.75

Halters and Ties—
Covert Mfg. Co., Web.. ..... 45&2%
Covert Mfg. Co., Jute Rope..... 45&2%
Covert Mfg. Co., Sisal Rope..... 30&2%
Covert's Saddlery Works', 90 list, W & b.. 60&10%
Covert's Saddlery Works, Leather 60&10%
Covert's Saddlery Works, Jute.... 60&5%
Covert's Saddlery Works, Sisal..... 60%
Covert's Saddlery Works, Manila..60&5%
Covert's Saddlery Works, Cotton.....70%

Hammers—
Handled Hammers—
Heller's Machinists' ..... 40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Peck, Stow & Wilcox ..... 40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail....33½&5%
Engineers' and B. S. Hand..... 50&10%
Machinists' Hammers..... 50&10%
A. E. & A. E., Bell Face Nail..... 33½&5%
Riveting and Tinners'..... 33½&5%
Sargent's C. S. New List..... 45@45&10

Heavy Hammers and Sledges—
3 lb. and under... *lb. 45c*
3 to 5 lb ..... *lb. 36c* } *70&10@75*
Over 5 lb ..... *lb. 30c* } *&10%*
Note.—Lower prices sometimes made by jobbers.
Wilkinson's Smiths' ..... *9½c@10c lb.*

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Hoe, Rake, Fork, &c ..... *50&10@60%*
Shovel, &c., Wood D Handle. 50@50&5%

Cross-Cut Saw Handles—
Atkins' ..... 40&5%
Champion ..... 45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted ..... *gro. $2 40@$2.60*
Auger, large ..... *gro. $2 85@$3.00*
Brad Awl ..... *gro. $1.50@$1.75*
Chisel Handles:
Apple Tanged Firmer, gro ass'd. $2.25@$2 35; large, $2.75@$3.00.
Hickory Tanged Firmer, gro ass'd. $1.75@$2.25; large, $2 35@$2.50.
Apple Socket Firmer, gro ass'd. $1 75@$2.25; large, $2.25@$2 50
Hickory Socket Firmer, gro ass'd. $1.60 @ $1.75; large. $1.75 @ $2.00
Hickory Socket Framing, gro ass'd. $2.50@$2.75; large, $2.65@$2.85
File, assorted ..... *gro. $1 00@$1.15*
Hammer, Hatchet, Axe, &c... *50&10%*
Hand Saw, Varnished, doz. 75@80c
Not Varnished ..... *55@60c*
Plane Handles:
Jack, doz. 23@25c; Jack Bolted.. 55@60c
Fore, doz. 35@38c; Fore, Bolted.. 70@75c

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$1.10	1.45	1.80	2.10	3.75

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$1.50	2.00	2 60	3.25

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Advance 55%
Cleveland 60%
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Ucar Ball Bearing, ₱ doz. pair $6.50
No. 10 Roller Bearing, doz. pr. 5.50
No. 20 Roller Bearing, doz. pr. 4.50
Nickel 50%
J. G. C. ..... 55&2&10%
Lane Bros.:
Parlor, Standard ..... 40&5&2½%
Parlor, New Model ..... 40&2½%
Barn Door, Standard ..... 60&2½%
Covered ..... 50&10&10%
Special ..... 60&5%
Lawrence Bros:
Crown 60%
New York 60%
Sterling 60%
McKinney Mfg. Co.:
No. 2, Standard, $18 ..... 60&10%
No. 1, Special, $13 ..... 60&10%
Stowell Mfg. and Foundry Co.:
Badger 60%
Baggage Car Door 33⅓%
Climax Anti-Friction 50%
Elevator 40%
Interstate ..... 50&10%
Magic 50%
Matchless ..... 50&10%
Nansen ..... 50&10%
Parlor Door 50%
Railroad ..... 50&10%
Street Car Door ..... 50&10%
Steel, Nos. 300, 400, 500 ..... 40&15%
Wild West ..... 50&5%
Zenith for Wood Track ..... 50&10%
Taylor & Boggis Foundry Co.:
Kidder's ..... 50&50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless ..... 33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 50%
L. T. Roller Bearing ..... 60&10%
New Era ..... 50&10%
New Richards 60%
O. K. Roller Bearing ..... 60&10&5%
Prindle Improved ..... 60&10%
Richards' Improved ..... 60&10%
Richards' Single Track ..... 50&10%
Wilcox Dwarf Roller Bearing ..... 40&10%
Wilcox-Ives ..... 60&10%
Wilcox Tandem Roller Bearing ..... 60&10%
Wilcox Trolley Ball Bearing 40%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire ..... 40&10%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp, ₱ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands ..... *40c&10@50%*
Cheaper Brands....50c&10@50c&10c&5%
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind and Shutter Hinges—
Acme and Dixie Shutter:

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.53

Buffalo and Queen City Reversible Shutter:

No	1	1½	2
Doz pair	$0.70	.65	.60

Lull & Porter Old Style Shutter:

No.	1	1½	2	2½
Doz. pair	$0 70	.65	.60	.53

1868 Old Pattern Blind Hinge:

No.	1	3	5
Doz. pair	$0.80	1.45	2.35

Parker ..... 70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 2, 3, 5 ..... 60%&10%
Sargent's, Nos. 11 & 13 ..... 7 &10@70&10&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter ..... 65&10&5%
Buffalo Gravity Locking, Nos. 1, 3 and 5 ..... 66&10&10%
Champion Gravity Locking, No. 75.75%
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75%
Tip Pattern, Nos. 1, 3 and 5 ..... 75%
Double Locking, Nos. 20 and 25 ..... 70%
Empire, Nos. 101 and 103 ..... 65&10%
Niagara Gravity Locking, Nos. 1, 3 and 5 ..... 65&10&10%
Noiseless, Nos. 56, 60, 65 and 55 ..... 65&10&5%
O. S. Lull & Porter ..... 65&10&10%
Pioneer. Nos. 060, 45 and 5½ ..... 65&10&5%
Steamboat Gravity Locking, No. 10.. 75%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.20 ..... 20&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$1.90	2.50	4.25
Hinges only	1.30	1.55	3.20
Latches only	0.70	0.70	1.20

New England:

With Latch	doz.	$1.75@1.80
Without Latch	doz.	$1.40@1.45

Reversible Self-Closing:

With Latch	doz	$1.85@1.75
Without Latch	doz.	$1.30@1.35

Western:

With Latch	doz.	$1.60@1.65
Without Latch	doz.	$1.00@1.05

Spring Hinges—
Holdback, Cast Iron...gro. $7.00@7.50
Non-Holdback, Cast Iron ..... *gro. $6.00@$6.50*

Extra 10% often given on most of these Hinges.

J. Bardsley
Bardsley's Patent Checking 10%
Bommer Bros.:
Bommer's 40%
Chicago Spring Butt Co.:
Chicago 20%
Garden City Engine House.. 20%
Keene's Saloon Door 20%
Triple End 40%
Coleman Hdw. Co.:
Champion Holdback...₱ gr. $10.00
J. G. C. ..... ₱ gr. $9.50
Nickel ..... ₱ gr. $9.00
Lawson Mfg. Co.:
Matchless 25%
Matchless Pivot 40%
Payson Mfg. Co.:
Oblique, Dbl. Acting ..... 50@50&5%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%
Van Wagoner & Williams Hdw. Co.:
Acme ..... 30&5%
American 30%
Columbia, No. 14 ..... ₱ gr. $8.00
Columbia, No. 18 ..... ₱ gr. $24.00
Crown 30%
Gem 30%
Knoxall ..... ₱ gr. $9.00
Oxford 30%

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..66⅔%
Heavy Strap Hinges..70%
Light T Hinges....50&10%
Heavy T Hinges...60&10%
Extra Heavy T Hinges... *66⅔%* } *Extra 20%@25%*
Hinge Hasps *45%*
Stanley's Corrugated Heavy Strap 70%
Stanley's Cor. Ex. Heavy T. 66⅔%
NOTE.—*Change in base discounts.*
Rolled Plate ..... *70@70&5%*
Screw Hook and Strap. *6 to 12 in..lb 5½@5¾c*; *14 to 20 in..lb 5¼@5½c*; *22 to 36 in..lb 5 @5¼c*
Screw Hook and Eye:
¾@1 inch ..... *lb 5½@5¾c*
⅝-inch ..... *lb 6½@6¾c*
½-inch ..... *lb. 8½@8¾c*

Hoes—
Eye—
Scovil and Oval Pattern ..... *60c&5@60c&10c&5%*
Grub, list Feb. 23, 1899 .... *65@65&10%*
D. & H. Scovil ..... 35@35&5%

Handled—
Aug. 1, 1899, List:
Field and Garden ..... *75&2%*
Ladies', Boys', Toy and Onion.. 70&10&10%
Street and Mortar ..... *75&7½&2%*
Cotton ..... *70&10&10&5&2%*
Planters' ..... *70&30%*
Weeding *75%*
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe.. 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2%
Ft. Madison Mattock Hoe, ₱ doz. $4.50
Ft. Madison Sprouting Hoe, ₱ doz..$4.80
Ft. Madison Dixie Tobacco Hoe..... 75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe 60%

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—
Bit—
Angular, ₱ doz. $24.00 ..... 45&10%

File and Tool—
Nicholson File Holders and File Handles 33⅓%

Hooks—
Cast Iron—
Bird Cage, Reading ..... } .50&10@60%
Bird Cage, Sargent's List. } .50&10@60%
Clothes Line, Sargent's List..... 35&10%
Ceiling, Sargent's List..... 40@40&10%
Clothes Line, Stowell's 70%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Sargent's List..... 35&10%
Coat and Hat, Wrightsville ..... 65&10%
Harness, Reading List..... 70&10@75%

Wire—
Belt ..... *75@75&10%*
Atlas, Coat and Hat..... 50@50&10%
Czar Harness ..... 50&10%
Wire Coat and Hat:
Acme ..... 60@60&5%
B. B. ..... 70@70&5%
V Brace, Chief and Czar..... 50&10%
Gem ..... 50&10%
Bright Wire Goods—See *Wire.*

Wrought Iron—
Box, or Case, Octagon Steel .... *doz. $2.10@2.30*
Cotton ..... *doz. $1.05@1.15*
Picture, T. & S. Mfg. Co 75%
Tassel, T. & S. Mfg. Co ..... 50&10%
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass	Nos.	1	2	3	4
Best		$1.50	1.75	2.00	
Common		$1.40	1.40	1.50	1.75

Potato and Manure ..... *75&15%*
Whiffletrees ..... *lb. 4½c*
Hooks and Eyes:
Brass ..... *60c&10c&10@70%*
Malleable Iron .... *70c&5@70c&10%*
Covert Saddler y Works' Self Locking Gate and Door Hook ..... 60&10%
Crown Picture ..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition ..... *ft. 4¾@ 5½c*
3-ply Standard ..... *ft. 5½@ 6 c*
4-ply Standard ..... *ft. 6½@ 6¾c*
3-ply extra ..... *ft. 6¾@ 7½c*
4-ply extra ..... *ft 7½@ 8½c*
High Grade ..... *ft 9 @11 c*
Cotton Garden, ¾-in., coupled:
Low Grade ..... *ft. 5½@6c*
Fair quality ..... *ft. 7 c*
Good quality ..... *ft. 8 @ 8½c*

Irons—Sad—
From 4 to 10 ..... *lb 3¼@3½c*
B B. Sad Irons ..... *lb. 3¾@4c*
Chinese Laundry ..... *lb. 5@5½c*
Chinese Sad ..... *lb. 3¾@4c*
Mrs. Potts', per set:

Nos.	50	55	60	65
	85@$1.00	78@93c	95@1.10	89@1.03

New England Pressing..lb.. 3¼@3½c

Soldering—
Soldering Coppers ..... *lb. 28@30c*
Covert Mfg. Co ..... 20&2%

Pinking—
Pinking Irons ..... *doz. 50@60c*

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel: ..... 45&2%
Daisy 70%
Ill. I. & B. Co Common..... 70@75%
Lockport ..... 40@40&10%
Victor 60%
Lane's Steel 33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 10, '99 ..... *15@20%*
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Dick's Butcher Knives 40%
Foster Bros.' Butcher, &c. 30%
Nichols' Butcher Knives..... 50%
Hay and Straw—See *Hay Knives.*

Corn—
Ft. Madison Cut-Easy, ₱ doz..... $3.25

Drawing—
Standard List ..... *70&10@75&...%*
Adjustable Handle ..... 25@33⅓%
Bradley's 35%
Swan's ..... 70&10&2½%
Watrous ..... 30&10@40%
L. & L. J. White ..... 20&5@25%
Cautelo's Folding ..... 50@50&5%

Hay and Straw—
Blizzard ..... $5.75@6.00
Iwan's Sickle Edge ..... ₱ doz. $11.50
Lightning $7.50

Mincing—
Buffalo ..... ₱ gro. $15.00
Smith's, ₱ doz., Single, $2; Double, $3 45@50%

Miscellaneous—
Farriers' ..... *doz. $2 00@3 00*
Wostenholme's ..... ₱ doz. $3.00@3 25

Knobs—
Base, 2¼-inch, Birch, Rubber tip, gro ..... *$1.50@1.55*
Carriage, Jap. all sizes..gro. 30@33c
Door, Mineral ..... *doz. 83@88c*
Door, Por. Jap'd ..... *doz. 99@97c*
Door. Por. Nickel....doz. $2 10@2.20
Bardsley's Wood Door, Shutter, &c. ..10%
Picture, Sargent's ..... 60&10%
Snow's Victor ..... 50&10%

Ladles—Melting—
L. & G. Mfg. Co 60%
P., S. & W ..... 40@40&10%
Reading ..... 50&10%
Sargent's ..... 40@40&10%

Lanterns—Tubular—
Regular Tubular ..... *doz. $4.00@4.50*
Side Lift Tubular ..... *doz. $4.25@4.75*
Square Lift Tubular..doz. $4.21@4 75
Other Styles ..... *40c&10@40c&10c&5%*
Meyrose Side Lift Tubular, doz. $8.50... 45&10%

Bull's Eye Police—
2¼-inch flash light....doz. $3.50@3.75
3-inch flash light ..... *doz. $4.00@4.25*
2¾-inch regular ..... *doz. $3.25@3.50*
3-inch regular ..... *doz. $3.50@3.75*

Latches, Thumb—
Roggin's Latches ..... *doz. 35c@45c*

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Small ..... *doz. 45c; large, 55c*
Covert Mfg. Co ..... 45&2%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Dickson:
3 x 4 ft. x ¼.....₱ 100 $11.00
Other sizes, Iron .....70&10%
Other sizes, Brass and Bronze.....70%
Excelsior .....60@60&10%
Payson's:
Solid Grip Nos. 643 and 644, ₱ 100, $11.00
Bronzed Iron..... .....70%

Lines—
Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	*$3.50*	*2 75*	*2 25*
75 feet			*$1.75*

Ossawan Mills.
Crown Solid Braided Chalk..... ..33⅓%
Mason's, No. 0 to No. 5 .....33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50
₱ gr.....30%

Locks, &c.— Cabinet—
Cabinet Locks.....*33⅓@33⅓&7⅓%*

Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40& 0%
Sargent & Co.....40@40&10%
Slaymaker-Barry Co.....30@35%
Snow's Victor.....50&10%

Elevator—
Stowell's.....33⅓%

Padlocks—
Wrought Iron, list Dec. 3, '97.....
70@70&10%
Dog Collar, S. B. Co.....40%
R. & E. Mfg. Co. Wrt. Steel a .d Brass.50%
S. B. & Co.....40%

Sash, &c.—
Fitch's Bronze and Brass..... 66⅔%
Fitch's Iron.....70%
Ives' Patent.....62½&10@66⅔&10%
Payson's Perfect.....70%
Payson's Signal (new list).....75%
Reading.....60&10&10@70%

Machines—
Boring—
Without Augers. Upright.		Angular.
Improved No. 3...$4.25	No. 1	$5.00
Improved No. 4... 3.75	No. 2	3.38
Improved No. 5... 2.75		
Jennings'..... 2.50		3.00
Millers' Falls.....		4.75
Snell's, Rice's Pat. 2.50		2.75
Swan's, No. 500.. 5.10	No. 200	6.45

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....80%
Moore's Hand Hoist, with Lock Brake.20%

Washing—
Wayne American, ₱ doz. $27.00
Western Star, No. 2, ₱ doz. 28.00
Western Star, No. 3, ₱ doz..... 30.00
St. Louis, No. 41, ₱ doz.. 60.00
Carload lots 10% off. Freight allowed.

Mallets—
Hickory .....*45&5@50&5%*
Lignumvitæ.....*45&5@50&5%*
Tinners', Hickory and Applewood, doz......*60@55c*
Fiber Head Stearns'.....30&10%

Mats—
Door—
Elastic Steel (W. G. Co.)..... ....10%

Mattocks—
List Feb. 23, 1899.....*65@65&10%*

Meat Cutters—
See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—
Box and Side, list Jan. 1, '88.....
60&5@60&10&5%
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93..30%
National, list Jan. 1, '94.....30%
Parker's Columbia and Victor....60&10%
Parker's Upright.....30&10@40%
Swift, Lane Bros.....30%

Mincing Knives—
See *Knives, Mincing.*

Molasses Gates—
See *Gates, Molasses.*

Money Drawers—
See *Drawers, Money.*

Mowers, Lawn—
Net prices are generally quoted.
	10	*12*	*14*	*16-inch*
Cheap.....				*$1.75@$2.00*
Good.....	*3.00*	*3.25*	*3 50*	*3.75*
High Grade	*4.00*	*4.25*	*4.50*	*4 75*

Pennsylvania and Continental 60&10&5%
Quaker City.....70&5%
Great American.....70&5%
Philadelphia:
Styles M., S., C., K., T.....70&10%
Style A, all Steel.....60&10%
Style E, Low Wheel.....60&10%
Style E, High Wheel.....60&10%
Drexel and Gold Coin, low list.....50%

Nails—
Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899.. .....60@80&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—
Nos.	6	7	8	9	10
A. C.....	*25¢*	*23¢*	*22¢*	*21¢*	*21¢*
					40&5%
Capewell.....	*19¢*	*18¢*	*17¢*	*16¢*	*16¢10&5%*
C. B. K.....	*25¢*	*23¢*	*22¢*	*21¢*	*21¢...40%*
Champlain....	*28¢*	*26¢*	*25¢*	*24¢*	*23¢*
					40&5&2%
Maud S.	*25¢*	*23¢*	*22¢*	*21¢*	*21¢...50%*
Neponset.....	*23¢*	*21¢*	*20¢*	*19¢*	*18¢...40%*
Putnam	*23¢*	*21¢*	*20¢*	*19¢*	*18¢.33⅓%*
Standard.....	*23¢*	*21¢*	*20¢*	*19¢*	*18¢...40%*
Star.....	*23¢*	*21¢*	*20¢*	*19¢*	*18¢.....*
					35& 5%
Vulcan	*23¢*	*21¢*	*20¢*	*19¢*	*18¢.....*
					25&10%

Picture
	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head.	*.45*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head...	*..*	*1.10*	*1.10*	*1.10*	*.. gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—
See *Crackers, Nut.*

Nuts—
List Feb. 1, '99.
Cold Punched. Mfrs. or U S. Standard. Off list.
Hexagon, plain.....3.90@4.10c
Square, plain.....3.90@4.10c
Square, C. T. & R.....3.70@3 90c
Hexagon, C. T. & R.....4.20@4.40c
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd. Square.....4.30@4 60c
Hexagon.....4.50@4.70c
NOTE.—*Tapped Nuts are now 2-10c. higher than above.*

Oakum—
Best or Government.....*lb. 5¾c*
Navy.....*lb. 4¾c*
U. S. Navy.....*lb. 5¼c*
Plumbers' Spun Navy.....*8¾c*
In carload lots ¼c lb. off f.o b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....*40&10@50%*
Tin or Steel ....*60&10&10@70&5%*
Zinc.....*60&5@65%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
Wilmot & Hobbs Mfg. Co ....70@70&10%

Openers, Can—
French.....*doz. 35c*
Iron Handle.....*doz. 25@27c*
Sprague, Iron Hdle..per doz 35@40c
Sardine Scissors...doz. $1.75@$3.00
National, ₱ gro.....$1.75@$2.00
Stowell's .....per doz. 40@45c

Packing—
Rubber—
Standard, fair quality....*70&10@75%*
Inferior quality .....*75&10@80%*
Extra.....*60&5@60&10&5%*
Jenkins' Standard, ₱ lb 80¢....25@25&5%

Miscellaneous—
American Packing.....*9@10c lb.*
Cotton Packing.....*13@14c lb.*
Italian Packing.....*10½@11¼c lb.*
Jute.....*5@5¼c lb.*
Russia Packing.....*12@13c lb.*

Pails—
Creamery—
S. S. & Co., with gauges.. No 1 $6.50; No. 2, $6.75 ₱ doz.

Galvanized—
Inch.....	*10*	*12*	*14*
Water, Standard, gro.....	*$23.00*	*$26 00*	*$29.00*
Water, Regular ..	*19.00*	*22.00*	*25.00*
Water, Heavy....	*22.00*	*25.50*	*28.00*
Fire, Rd. Bottom, gro.....	*31.00*	*35.00*	*35.00*
Well, gro.....	*27.00*	*29.00*	*31.00*

Pans—
Dripping—
Large Sizes.....*lb. 4¾c*
Small Sizes.....*lb. 5¼c*
Fry—
Standard List.....*75&10@80%*

Roasting and Baking—
Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10, $5.00; 20 $5.50; 30, $6.00
Simplex, ₱ gro., No. 40, $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

Paper—
Building Paper—
	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt , 20 sq. ft. to lb	*$0 40@0.45*
Medium wt., 12 sq. ft. to lb	*$0.60@0.65*
Heavy wt., extra quality	*$0.95@1.05*
Medium Grades Water Proof Sheathing	*$0 80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$45.00@50.00*
York Haven Waterproof Sheathing	$1 35@1.75

Tarred Paper.
1 ply (roll 500 sq ft.), ton..$35 00@40.00
2 ply, roll 100 sq. ft.....*90c*
3 ply, roll 100 sq. ft.....*$1.20*

Sand and Emery—
List Dec. 23, 1899..50&10@50&10&10%
see *Trade Report.*

Parers—
Apple—
Advance.....	₱ doz.	$4.50
Baldwin.....	₱ doz.	$5.00
Bonanza.....	each	$5.00
Dandy.....	each	$7.50
Eureka, 1898.....	each	$16.00
Family Bay State.....	₱ doz.	$12.00
Hudson's Lt tle Star.....	₱ doz.	$4.00
Hudson's Rocking Table....	₱ doz	$5.50
Improved Bay State ₱ doz.		$37.00@30.00
New Lightning.....	₱ doz.	$5.50
Reading 72.....	₱ doz.	$4.00
Reading 78.....	₱ doz.	$7.00
Turn Table '98.....	₱ doz.	$5 50
White Mountain.....	₱ doz.	$4.00

Potato—
Saratoga.....	₱ doz.	$5.50
White Mountain.....	₱ doz.	$4.50

Paris Green—
Arsenic, kegs or casks.....*lb. 13 c*
Kegs, 100 to 175 lb..... ..*lb. 13½c*
Kits, 14, 28, 56 lb.....*lb. 14½c*
Paper boxes, 2 to 5 lb.....*lb. 14½c*
Paper boxes, 1 lb.....*lb. 15 c*
Paper boxes, ½ lb.....*lb. 16 c*
Paper boxes, ¼ lb.....*lb. 17 c*

Picks and Mattocks—
List Feb 23, 1899.....*65@65&10%*

Pinking Irons—
See *Irons, Pinking.*

Pins—
Escutcheon—
Brass ....*60@60&5%*
Iron, list Nov. 11, '85.....*60@60&5%*

Pipe, Cast Iron Soil—
Factory Shipments.
Standard, 2-6 in.....*50@50&10%*
Extra Heavy, 2-6 in.....*50&10@60%*
Fittings .....*60@60&10%*

Pipe, Wrought Iron—
Factory Shipments.
List February, 1899.
Plain and Galvanized:
Carload lots.....*50&10&10%*
Less than carload lots...*50&10&2½%*
Screw and Socket Casing,.....*37½&5%*
Inserted Joint Casing.....*32½&5%*
Cold Drawn Seamless Steel Tubing..
60%

Planes and Plane Irons—
Wood Planes—
Molding.... ... .*40&2½@40&5%*
Bench, First quality.....
45&10@45&10&5%
Bench, Second quality.....
50&10@50&10&5%
Bailey's (Stanley R. & L. Co) 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—
Bailey's (Stanley R. & L. Co).....
50&10@50&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10@25&10&10%
Sargent's.....50&10@60%

Plane Irons—
Wood Bench Plane Irons.. *35@35&5%*
Buck Bros.....30%
Butcher's.....$5.00@5.25 to 2
Stanley R. & L. Co... 50&10@50&10&10%
L. & I. J. White.....20&5@25%

Plates—
Felloe.....*lb. 3½@3¾c*
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—
Button Pliers.....*65&10@70&5%*
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45.
Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$1.75	*$2.00*	*$2.75*	*$3.75*

Acme Nippers..... 40@40&5%
Bernard's:
Parallel Pliers, &c.....33⅓%
Paragon Pliers.....50%
Lodi Pliers.....50%
Elm City Fence Pliers.....33⅓%
Heller's Farriers' Pincers and Tools.....
40@40&5%
Morrill's Parallel, ₱ doz. $12.00...30&5%
P., S. & W. Cast Steel.....30&10@40%
P., S. & W. Tinners' Cutting Nippers, 40@40&5%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Plumbs and Levels.....
70&10&10@75&10&10%
Disston's.....70%
Pocket Levels.....75&10&10@75&10%
Stanley R. & L. Co.....
70&10&10@70&10&10&10%
Stanley's Duplex.....25&10@25&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00; No. 3, $11.00; No. 4, $14.50.....50%

Points, Claziers'—
Bulk and 1 lb. papers.. lb. 10½@11¼c
½-lb. papers.....*lb. 11 @12 c*
¼-lb. papers..... .....*lb. 11½@12½c*

Pokes, Animal—
Ft. Madison, Hawkeye.....₱ doz. $3.25
Ft. Madison, Western.....₱ doz. $3.75

Police Goods—
Manufacturers' Lists.....*25@25&5%*
Tower's.....25%

Polish—Metal—
Prestoline Liquid, No. 1 (1 pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....33⅓&40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $1.50

Stove—
Black Eagle Benzine Paste, 5 ℔ cans, ₱ ℔ 10¢
Black Eagle, Liquid, ½ pt. cans.....
₱ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ ℔ 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, ¼ pt. cans.....
₱ doz. $1.50
Wynn's Black Silk, 5 ℔ pail.....₱ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₱ doz. $1.00

Poppers, Corn—
Round or Square:
1 qt.....*gro. $7 00@$8.00*
1½ qt.....*gro. 9 50@ 10 50*
2 qt.....*gro. 10.50@ 11.50*
Quincy Corn Popper, 1 qt., ₱ gr. $16.50; 2 qt., $19.00.

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Potato Parers—
See *Parers, Potato.*

Pots— Glue—
Enameled.....*40&5@40&10%*
Tinned .....*40@40&5%*

Powder—
In Canisters:
Duck, 1 lb. each *45c*
Fine Sporting, 1 lb. each.....*75c*
Rifle, ½-lb. each.....*15c*
Rifle, 1-lb. each.....*25c*
In Kegs:
Duck, 6½-lb. kegs.....*$2.25*
Duck, 12½-lb. kegs.....*$4.25*
Duck, 25-lb kegs.....*$8.00*
Rifle, 6¼-lb. kegs.....*$1.25*
Rifle, 12½-lb. kegs.....*$2.25*
Rifle, 25-lb. kegs.....*$4.00*
King's Smokeless:
Keg (25 ℔ bulk).....$20 00
Half Keg (12½ ℔ bulk).....$10.25
Quarter Keg (6¼ ℔ bulk)..... $5.25
Canister (1 ℔ bulk) $0.90
Case, 1 ℔ Canisters (50 ℔ bulk) $45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk).....$22.75
25&10&2%
King's Semi-Smokeless:
Keg (25 ℔ bulk).....$16.00
Half Keg (12½ ℔ bulk).....$5.25
Quarter Keg (6¼ ℔ bulk).....$2.75
One Pound Can, bulk.....$0.50
20&2%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—
Crown, ₱ doz. $18.00.....50%
Crown Prince, ₱ doz. $15.00.....50%
Cyclops.....40@40&10%
Diamond B, No. 2, doz. $22.; No. 3, $11.....40%
Eureka, 5 ℔, doz., $16.00; 3 ℔ $15...40%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%
National, ₱ doz. $24.00.....50%
Miller's Falls, No. 3, per doz. $12.00.....
15&10%
Pelican, ₱ doz. $9.00.....4 &10%
Scranton No. 1 and 2, ₱ doz.... $9.00
Scranton, No. 3, ₱ doz.....$8.50

Pulleys—

Hay Fork, Swivel or Solid Eye ..... doz. $1.60@2.00

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00..... 40%
Hot House, Awning, &c..... 60@60&10%
Japanned Clothes Line..... 60@60&10%
Japanned Screw..... 70&10&10%
Japanned Side..... 70&10&10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction .. 60&10%
Stowell's Electric Light..... 60%
Stowell's Side, Anti-Friction..... 60&10%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₱ doz., 20¢; 2 in., 22¢.
Empire ..... 1¾ in., 17¢; 2 in., 19¢
Grand Rapids All Steel Noiseless.. 40%
I. C..... 1¾ in., 15¢; 2 in., 17¢
Ideal No. 13..... 1¾ in., ₱ doz., 20¢
Improved..... 1¾ in., 17¢; 2 in., 19¢
Niagara..... 1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..... 1¾ in., 16¢; 2 in., 19¢
Star..... 1¾ in., 16¢; 2 in., 19¢
Acme..... 1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks*.

Pumps—

Cistern..... 60@60@5%
Pitcher Spout..... 70&10@75%
Pump Leathers, all sizes....gro. $6.00
Flint & Walling's Fast Mail..... 50@55%
Flint & Walling's Pitcher Spout. 70&10%
Loud's Suction Pumps, U. S. Co..... 20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co..... 20%

Punches—

Revolving (4 tubes)...doz. $3.75@4.00
Saddlers' or Drive, good..doz. 65@70c
Spring, good quality.....$1.70@1 80
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co.'s Check..... 55%
Bemis & Call Co.'s Spring..... 50&5%
Niagara Hollow Punches..... 45%
Niagara Solid Punches..... 55%
Spring, Leach's Pat..... 15%
Steel Screw, B & K. Mfg. Co..... 40%
Tinners' Hollow, P., S. & W. Co..... 35@3%&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44..... 55%

Rail—

Barn Door, &c.—

	In. ⅛	⅙	¼
Barn Door, Light.. 100 feet.....	*$2.00*	*$2.50*	*$5.00*
B. D., for N. E. Hangers: 100 feet.....	*Small. $2 20*	*Med. 2.70*	*Large. 3.20*

Sliding Door, Bronzed Wr't Iron, ft. 6¼c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass. 1¼ in. ..... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot..... 3¼¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$3.00
Lanes' Standard, ₱ 100 ft..... 4.25
Lawrence Bros.' ..... ₱ ft. 4¼¢
McKinney's None Better..... ₱ ft. 3¢
McKinney's Standard..... ₱ ft. 3¼¢
Moore's, Wr't. Bracket, Steel..... 3¼¢
Stowell's Steel Rail, Plain 15%

Rakes—

Aug. 1, 1899, List:
Cast Steel..... 70&5&2%
Malleable..... 66⅔%
Fort Madison Red Head Lawn.....$3.25
Fort Madison Blue Head Lawn.....$3.00

Rasps, Horse—

Disston's 75%
Heller Bros..... 60&10& 0%
New Nicholson Horse Rasp..... 70&10%
See also *Files*.

Razors—

Fox Razors, No 42, per doz., $10.00; No. 44, $12.00; No. 82, Platina $12.00.

Razor Strops—

See *Strops, Razor*.

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes..... 25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor. 50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN..... 40&10%

Registers—

For points on Mississippi River and East:
Black Japanned..... 30&10%
White Japanned..... 30&10%
Bronzed Finishes..... 30%
Nickel Plated..... 50&10%
Electro Plated in Brass, &c..30&10%
White Porcelain..... 30%
Solid Brass and Bronze Metal.. 20%
Note—Higher prices are quoted in territory further West.

Riddles, Grain or Sand—

16 in. per doz.....$2.00@$2.25
17 in. per doz.....$2.25@$2.50
18 in. per doz.....$2.50@$2.75

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Bisel	*$0.75*	*0.83*	*0.88 doz.*
Conner	*1.10*	*1.30*	*1.50 doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@5.00
Hill's Ringers, G. I.....doz. 75c
Blair's Rings..... ₱ gr. $5.75@6.00
Blair's Ringers..... ₱ doz. $0.90@1 00
Brown's Rings..... ₱ gro. $6.00@6.25
Brown's Ringers..... ₱ doz $1.00@1.10¢
Perfect Rings..... ₱ gro. $9.00@9.50
Perfect Ringers, ₱ doz.....$1.25@1.35
Rapid Rings..... ₱ gro. $6.00
Rapid Ringers..... ₱ doz. $3.50

Rivets and Burrs—

Copper.....40¢10@50%
Iron or Steel:
Tinners' .....53½@52½¢10%
Miscellaneous ..... 53½@52½¢10%

Rivet Sets—See *Sets*.

Roasting and Baking Pans—See *Pans, Roasting and Baking*.

Rollers—

Acme, Stowell's Anti-Friction 50%
Barn Door, Sargent's list. 60&10&10@70%
Lane's, Stay ..... 33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.25

Rope—

NOTE.—*Carload lots, except on Jute Rope, ¼c. per lb. less than the following prices, which are for small lots.*

Manila, 7-16 in. and larger. lb. .. @15½c
Manila.....⅜-inch lb. .. @16 c
Manila..¼ and 5-16 in. lb. .. @16¼c
Manila, Tarred Rope, 15 thread..... lb .. @15½c
Manila Hay Rope Med'm. lb .. @15½c
Sisal, 7-16 in. and larger, lb. .. @10½c
Sisal ..... ⅜-inch. lb... @11 c
Sisal, ..¼ and 5-16 in. lb. .. @11½c
Sisal, Hay Rope, 2 to 10 ply..... lb. .. @10½c
Sisal, Tarred, Medium Lath Yarn..... lb... @10 c
Cotton Rope:
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com., ¼-in. and larger.lb. 8@10 c
Jute Rope, No. 1, ¼ in. and up ..... lb.. @7 c
Jute Rope No. 2, ¼ in. and up..... lb.. @6¼c

Wire Rope—

List July 1, '99.....30¢2½%

Ropes, Hammock—

Covert Mfg. Co..... 45&2%
Covert Saddlery Works..... 60%

Rules—

Boxwood..75¢10¢10¢10@75¢10¢10¢10¢10%
Ivory ...40¢10¢10@40¢10¢10¢10¢10%
Lufkin's Steel..... 50&10%
Lufkin's Lumber ..... 50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory..... .35&10&10@35&10&10&10%

Sad Irons—See *Irons, Sad*.

Sand and Emery Paper and Cloth—

See *Paper and Cloth*.

Sash Cords—See *Cord, Sash*.

Sash Locks—See *Locks, Sash*.

Sash Weights—

See *Weights, Sash*.

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage*.

Saw Frames—

See *Frames, Saw*.

Saw Sets—See *Sets, Saw*.

Saw Tools—See *Tools, Saw*.

Saws—

Atkins' Circular..... 50@50&10%
Atkins' Band ..... 50&10@60%
Atkins' Cross Cuts ..... 35&5%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw..... 40%
Atkins' Wood Saws 40%
Atkins' Hand, Compass, &c..... 40%
Disston Circular Solid and Inserted Tooth..... 50%
Disston Band 2 to 14 in. wide..... 60%
Disston Band ¼ to 1¼..... 70%
Disston Crosscuts..... 45@45&10%
Disston Narrow Crosscuts..... 50@50&10%
Disston Mulay, Mill and Drag..... 50%
Disston Framed Woodsaws..35@35&7½%
Disston Woodsaw Blades....40@40&7½%
Disston Woodsaw Rods..... 20%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 79, 77, 8.....25@25&7½%
Disston Hand Saws, Nos. 7, 107, 10½, 3, 1, 0, 00, Combination... 30@30&7½%
Disston Compass Keyhole, &c25@25&7½%
Disston Butcher Saws and Blades..... 35@35&7½%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill..... 50%
Peace Cross Cuts, list Jan. 1, '99..... 50%
Peace Hand, Panel and Rip..... 30%
Richardson's Circular and Mill..... 50%
Richardson's X Cuts, list Jan. 1, '99..50%
Richardson's Hand, &c..... 30%
Simonds' Circular Saws..... 50%
Simonds' Crescent Ground Cross Cut Saws..... 35%
Simonds' One-Man Cross Cuts.... 40&10%
Simonds' Gang Mill, Mulay and Drag Saws..... 45@45&5%

Hack Saws—

Disston Concave Blades..... 25%
Disston Keystone..... 30%
Disston Hack Saw Frames..... 30%
Griffin's complete..... 50@50&10%
Griffin's Hack Saw Blades....50@50&10%
Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15..... 25%
Barnes' Scroll Saw Blades..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%
Lester, complete, $10.00..... 15&10%
Rogers, complete $4.00..... 15&10%

Scale Beams—

See *Beams, Scale*.

Scales—

Family, Turnbull's.... ...30@30&10%
Hatch, Counter: Platform, 4 lb. by ½ oz...doz. $5.75 Two Platforms, 8 lb. by ½ oz..... doz. $16 00
Union Platform, Plain....$2.00@2.10
Union Platform, Striped...$2.15@2 25
Chatillon's Eureka..... 25%
Chatillon's Favorite..... 40%
Chatillon's Grocers' Trip Scales..... 50%
Pelouze Scales—Family, Candy, Grocers' and Postal .....New list net
"The Standard" Portables 45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box. 1 Handle .....doz $2.25@2.75
Box. 2 Handle ..... doz. $3.75@4.00
Ship, No. 1, doz. $3.50; No 2, $2.25@2.50
Adjustable Box Scraper (S. R. & L. Co.) $6.00..... 40&10%
Foot, W. E. Pratt Mfg. Co. ₱ doz. $1.15@$1.25

Screens, Window and Frames—

Bonanza Window Screens...50&10&3⅓%
MaineWindow Screen Frames 40&10&5%
Phillips' Window Screen Frames.....50%
Porter's Extension Window Screens.. 50&10%
Wabash Spring Adj. Screen..... 50%

Screw Drivers—

See *Drivers, Screw*.

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $2.50@2.75; 1⅛, $2.85@3.10; 1¼, $3.85@3.50
Bench, Wood, Beech..doz. $3.50@3.75
Hand, Wood..... .. 35@40%
Hand, Grand Rapids..... 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99..... 65¢5@...%
Coach and Lag, Gimlet Point, list Oct. 1, '99..... 65@ ...%
Hand Rail, list Jan. 1, '81.60¢10@...%

Jack Screws—

Millers Falls..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W..... 40&5@40&10%
Sargent..... 60&10@60&10&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron..... 50%
Flat or Round Head, Brass..... 50%

Set and Cap—

Set (Iron or Steel) 60%
Sq. Hd. Cap..... 55%
Hex. Hd. Cap..... 50%

Wood—

List Jan. 1, 1900.
Flat Head, Iron..... 80%
Round Head, Iron..... 75%
Flat Head, Brass..... 77½%
Round Head, Brass..... 72½%
Flat Head, Bronze..... 72½%
Round Head, Bronze..... 70%
Drive Screws..... 80%
Note.—An extra 10 or 10&5% is often given.

Scroll Saws—See *Saws, Scroll*.

Scythes—

Scythe Snaths—

See *Snaths, Scythe*.

Seeders—

Raisin—

Enterprise..... 25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets: Wood Hdle., 10 Awls doz. $2.00@2.25 Wood Hdle., 14 Awls, 6 Tools.... doz. $2.50@2.60
Aiken's Sets, Awl and Tools: No. 20, ₱ doz. $10.00. 60&10@60&10&5%
Fray's Adj. Tool Holders, No. 1, $12; 2, $13; 3, $12; 4, $9; 5, $7..... 50%
Millers Falls Adj. Tool Holds, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2 $4.00; No. 3, $5.50..... .30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Round, assorted.....gro. $3.25@3.75
Octagon.....gro. $4.25@4.75
Knurled. Good.....gro. $6.00@6.50
Buck Brothers..... 27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Snell's Corrugated, Cup Pt..... 50%
Snell's Knurled, Cup Pt..... ....66⅔%

Rivet—

Regular list.....70@70¢10¢5%

Saw—

Aiken's Genuine..... ₱ doz. $4.50@5.00
Aiken's Imitation ..... ₱ doz. $3.00@3.10
Atkin's Criterion..... 40%
Atkin's Adjustable..... 40%
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate..... 20%
Bemis & Call Spring Hammer.....30&5%
Disston's Star and Mona ch..... 25%
Hammer, Bemis & Call Co.'s new Pat. 45%
Morrill's No. 1, $15.00..... 40&20%
Nos. 3 and 4, Cross Cut, $23.00. 40&20%
No. 5, Mill, $31.00..... 40&20%
No. 10, $15.50..... 40&20%
No. 11, $16.00..... 40&20%
Taintor Positive, ₱ doz. $18 ..... 60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron..... ....doz. $1 00@1 25
Wood..... ....doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00..... 15&10%

Shears—

	7	*8*	*9 in.*
Cast Iron...			
Best	*$16.00*	*13.00*	*20.00 gro.*
Good.....	*$13.00*	*15.00*	*17 00 gro.*
Cheap.... $5.00		*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap..60¢10¢10@70¢5%
" Nickel.....60@60¢5%
Fair qual. Jap.....75¢10@80%
" Nickel.....70¢10@75%
Tailors' Shears.....40@40¢10%
Acme Cast Shears..... 40@40&5%
Heinisch's Tailors' Shears.....40@40&5%
National Cutlery Co., Nickel .....60&10%
National Cutlery Co., En. Hdls....70&10%
Seymour's, Jap..... 70@70&5%
Seymour's Nickel..... 60@60&5%
Seymour's Tailors' Shears..... 40%
Wilkinson's Hedge..... 50%
Wilkinson's Sheep..... 15%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10% Malleable Handles, Laid with Steel, 40%
Forged Handles, Steel Blades, Berlin.. 40&10%
Niagara Snips..... 40%
Seymour's..... .....40@40&5

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company's Pruning Shears all grades..... 50&5%
Orange Shears..... 50&30%
Grape..... 50&10%
Tree Pruners..... 75%
P., S. & W. Co..... 33⅓&33⅓&10%
Seymour's..... 60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction..... 50%
Patent Roller..... 60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading..... ..... 70&10@75%
R. & E..... 45&10%
Wrightsville, Hatfield Pattern..... 80%

Sliding Shutter—

Reading list..... 70&10@75%
R. & E..... 60@60&10%
Sargent's list..... 50&5@50&10&5%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, all gauges..... 60&5%
Club, Rival, Climax, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Club, Rival, Climax, Ideal, 14, 16 and 20 gauge ($7.50 list)..... 20&10&5%
Club, Rival, Climax, League, 10 and 12 gauge..... 33⅓&5%
Acme, Leader, New Rapid, Ideal, Smokeless, 10, 12, 16 and 20 gauge. 33⅓&10&5%
Trap and Metal Lined, 10, 12, 16 and 20 gauge..... 33⅓&10&5%
Primrose Club, Blue Rival, Yellow Rival, New Climax, 10, 12, 16 and 20 gauge..... 20%
High Base, Nitro, Repeater, Defiance, New Victor, 10, 12, 16 and 20 gauge 15%

Shells, Loaded—

Loaded with Black Powder..... 40¢5%
Loaded with Nitro Powder..... 40¢10¢10¢5%

Shoes, Horse, Mule, &c.—

Factory Shipments:
Horse and Mule, per keg..... $3.75
Burden's, all sizes..... $3.70
Bryden, Phœnix, Perkins, &c $3.75
Diamond State, Shoenberger, Crescent, &c. $3.75..... ...5%
NOTE.—*See Trade Report.*

Shot—

Drop, up to B, 25-lb. bag...$1.40@1.50
Drop, up to B, 5-lb. bag ..... .35@ 40
Drop, B and larger, 25-lb. bag.... $1.65@1.75
Drop, B and larger, 5-lb bag .35@.40
Buck, 25-lb. bag..... .....$1.65@1.75
Buck, 5-lb. bag..... .35@ 40
Chilled, 25-lb. bag..... $1.65@1.75
Dust Shot, 25-lb. bag..... $2.00@2.10
Dust Shot, 5-lb bag..... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2, 2d Grade.*
Plain Back....	*$10.50*	*$9 60*
Strap Back....	*9.90*	*9 00*
Cleveland Pat'n	*10.20*	*9.30*

	C3, 3d Grade.	*D4, 4th Grade*
Plain Back....	*$8.70*	*$8.10*
Strap Back.....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 30c doz. Black deduct 30c doz.

Note.—The above are the regular Association prices to small retailers, but are often shaded by jobbers.

Shovels and Tongs—

Brass Head.....60&5@60&10%
Iron Head.....60&5@60&10%

Sieves and Sifters—

Hunter's Imitation.gro. $11.00@12.00

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

Eclipse.....₱ gr. $10.00
Electric Light.....₱ gr. $12.00
Hunter's Genuine.....₱ gr. $12.50
Shaker (Barler's Pat.) Flour Sifters.
₱ doz., $2.00.....95%

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz.....$0.75@0 80
Mesh 20, Nested, doz..... .85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Low list.....60@65%

NOTE.—*The low list is now generally used, but some jobbers use high list.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted.....45%
L. & G.....50%

Skeins, Wagon—

Cast Iron.....70@70&10%
Malleable Iron.....40&10@50%
Steel.....35@35&5%
I. I. & B. Co. Steel.....35%

Slates—

"D" Slates.....60&10@50&10&10%
Unexcelled Noiseless Slates.....
60&6 tens@60&6 tens&5%
Wire Bound.....40&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....40@40&10%

Covert Mfg. Co.:
Derby.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%

Covert's Saddlery Works:
Banner.....60&10%
Crown.....60&10%
Triumph.....60&10%

W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
German.....40%
National.....50&5%
Perfect.....45%
Clipper.....50&5%
Champion.....40%
Security.....40%
Victor.....60&5%

Oneida Community:
Soi d Steel.....65@65&10%
Solid Swivel.....65&10@65&10&10%
Sargent's Patent Guarded.....
60%@60%&10%

Snaths—

Scythe.....45&5%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware.....60&10@60&10%
Wm. Rogers Mfg. Co.....50&10%

Miscellaneous—

German Silver.....60&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....80&10@60&10&5%

Carriage, Wagon, &c.

	1¼ in. and wider	...Blk. Hf.	Brt.	Brt.
	Tested and Temp	5½	5¾	6c lb
	Oil Tested and Tempered	6½	6¾	7c lb

Cliff's Bolster Springs.....35%
Cliff's Seat Springs.....₱ pair 55¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } *List Jan. 5, 1900*
Steel and Iron... } *70@70&5@.....%*
Rosewood Hdl. Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels.
40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0. $5.00; No. 1, $5.75@$6.00; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap.....doz. *$2.40@2.75*
Good Grade.....doz. *$3.00@3.50*
Tinned Iron.....doz. *$0.75@1.25*
Iron, Porcelain Lined doz. $2 90@3.25
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind.....lb. 9@10c
Electricians', Association list..75&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting.....80&10%
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%

Steelyards.....25@35&10%

Stocks and Dies—

Blacksmiths'.....40%
Gardner.....50%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ b...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 8 in.....80¢ } 33⅓@33⅓&10%
Turkey Slips.....$1.50
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 8 to 5 in. $2.80
Arkansas Stone, No. 1, 5½ to 3 in. $3.50
} 33⅓@33⅓&10%

Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....25&5%
Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal, case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points ...doz. 55@65c
Cast Steel, Polished.....doz. $2.25
Socket.....*doz. $1.75*

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90@90&10%
American Tinned.....90@90&10%
American Cut Tacks.....
85&10@85&10&10%
Swedes Iron Tacks.....90@90&10%
Swedes Upholsterers' Tacks.....
90&20@90&25%
Gimp Tacks.....90&20@90&25%
Lace Tacks.....90&30@90&25%
Trimmers' Tacks.....80@90&10%
Looking Glass Tacks.....70@70&10%
Bill Posters' and Railroad Tack.....
90&20@90&25%
Hungarian Nails.....80&5@80&15%
Common and Patent Brads.....70&5%
Trunk and Clout Nails.....
75&5@75&10&5%

NOTE.—*The above prices are for "straight Weights." An extra 5% is given Star Weights and an extra 10&5% on Standard Weights.*

Miscellaneous—

Double Point Tacks.....90&5@90&10%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....60&10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4.00
Queen City S.S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin.....40&10@50%
Patent Leather.....25@30&5%
Steel.....40@40&5%
Chesterman's.....25@25&5%
Eddy's Steel.....40@40&5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30&5%

Thermometers—

Tin Case.....80@80&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco*

Tools—

Coopers'—

L. & I. J. White.....20@20&5%

Saw—

Atkins' new list.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....70&10@75&5%
Newhouse.....45@50%
Hawley & Norton.....65&5@70%
Victor (Oneida Pattern).....75@75&10%
Star, (Blake Pattern).....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes. 9@10c
Mouse, Round or Square Wire.....
doz. $0.85@1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz. $12.00; case of 24 $10.50
No. 3, Rat, ₱ doz. $5.50; case of 50 $5.00
No. 3½, Rat, ₱ doz. $4.50; case of 72 $4.00
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mole, $6.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme.....
doz. $1.15@1.25; gro. $12.00@14.00
Harper, Champion or Paragon.....
doz. $1.25@1.40; gro. $13.50@15.00

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%
Stearns'.....25%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break steel Garden Trowels.....
gro. $7.00
Peace's Plastering.....30%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plaster'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized S. S. & Co., with Wringer Attachment ₱ doz., No. 10, $7.25
No. 20, $7.75; No. 30.....$8.25

Twine—

Binder—

Carload lots f.o.b. New York, Philadelphia or Boston.
White Sisal, 500 ft. to lb. per lb. 11¼c
Standard, 500 ft. to lb....per lb. 11¼c
Manila, 600 ft. to lb.....per lb. 14¼c
Pure Manila, 650 ft. to lb per lb 15¾c
Less than carloads add ¼¢ per lb.

Miscellaneous—

	BC	B.
Flax Twine—		
No. 9, ¼ and ½-lb. Balls..	*22c*	*26c*
No. 12, ¼ and ½-lb. Balls..	*19c*	*22c*
No. 18, ¼ and ½-lb. Balls..	*16c*	*19c*
No. 24, ¼ and ½-lb. Balls..	*16c*	*19c*
No. 36, ¼ and ½-lb. Balls..	*15c*	*18c*

Chalk Line, Cotton, ½-lb. Balls.....
18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....*7@8c*
Cotton Wrapping, 5 Balls to lb ...
9@16c
American 2-Ply Hemp, ¼ and ½-lb. Balls.....*12@15c*
American 3 Ply Hemp, 1-lb. Balls..
12@12c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....*10c*
India 3-Ply Hemp, 1-lb. Balls.....*10c*
India 3-Ply Hemp, 1½-lb. Balls.....*9c*
2, 3, 4 and 5-Ply Jute, ½-lb. Balls...
8@9c
Mason Line, Linen, ½-lb. Balls...*15c*
No. 264 Mattress, ¼ and ½-lb. Balls 35c
Wool.....*7c*

Vises—

Solid Box.....50@.....%
Bonney's Saw Vises.....40&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40&10%
Fisher & Norris Double Screw..15&10%
Hollands'.....40@40&10%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's Clincher.....30@40%
Merrill's.....20%
Miller's Falls.....low list 10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....60%@60%&10%
Simpson's Adjustable.....40%
Snediker's X. L.....20@25%
Stephens'.....20@25%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 .50&10%
Disston's D 8 Clamp and Guide, ₱ doz. $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&7½%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%

Parker's Combination Pipe:
87 Series.....60%
157 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up.....60c
B. E., 9 and 10.....70c
B. E., 8.....80c
B. E., 7.....80c
P. E., 11 up.....*$1.00*
P. E., 9 and 10.....*1.25*
P. E., 8.....*1.50*
P. E., 7.....*1.50*
Ely's B. E., 11 and larger..$1.70@1.75
Ely's P. E., 12 to 20.....*$3.00@3.25*

Dis. 30&5%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60@60&7½%
Unground.....65@65&10%
White Enameled Ware:
Muslin Kettles....75&10@75&10&5%
Boilers and Saucepans...55@55&5%
Tinned Boilers and Saucepans.....
55@55&5%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99.40%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality, Agate Nickel Steel..65%
Second Quality, Granite.....
70&10@70&10&10%
Iron Clad:
Peppered Ware, high list.....70%
Princess Ware, special list.....33⅓%
Mottled Ware, high list.....75%
Never Break Enameled....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each.....	*40c*	*45c*	*50c*	*60c*

Steel Hollow Ware.

Avery Spiders & Griddles....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles.....
65@65&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame.$3.00
Red Star, laundry size, stationary protector.....$4.95
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Wilson, family size, bent frame...$2.75
Single Zinc Surface:
Nalad protector, family size, open back perforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.25
Wilson, bent frame, family size, ventilated back.....$2 25

Washers—
Leather, Axle—

Solid.....80c@10c&10@85%
Patent.....85@35c&5%
Coil: ⅜ 1 1⅛ 1¼ Inch.
11c 13c 14c 16c per 100

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$6.20 5.30 4.00 3.80 3.60
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.
NOTE—Jobbers' prices generally lower than manufacturers'.

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Weaners—
Tyler's New Ha'ter—No. 1 ₱ doz. $3.45; No. 2, $3.70; No. 3, $4.00; No. 4 $4 30
Tyler'sSafety—Nos. 1 and 2, ₱ doz. $1.70; No. 3, $2.00; No. 4, $2.30.

Wedges—
Oil Finish.....lb. 4@4¼c
Axe Finish.....lb. 4¼@4½c

Weights, Sash
Carloads at factory.....$21.00@.....
Less than carloads at factory.....
$22.00@.....

NOTE.—There is a wide difference in prices East and West, and some Foundries are naming considerably higher prices than the above.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1 75@2.00; 10-in., $2.25@2.60; 12-in., $2.75@3.25; 14-in., $4 00@4.50

Wire and Wire Goods—
Brt. and Ann., 6 to 9.65c&7½@65c&10%
Brt. and Ann., 10 to 18.....70@70c&5%
Brt. and Ann., 19 to 26.....
73¼c&5@73¼c&10%
Brt. and Ann., 27 to 36.....75@75c&5%
Cop'd and Galv., 6 to 9.62½@62½c&5%
Cop'd and Galv., 10 to 18..65@65c&2½%
Tinned, 6 to 14.....70@70c&5%
Tinned, 15 to 18.....67½@67½c&5%
Annealed Wire on Spools.....
60c&10@60c&10c&5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
Iron and Brass, list July 1, 1899....
80c&10@80c&10c&10%

Wire Cloth and Netting—
Galvanized Wire Netting.....
75c&10@75c&10c&5%
Painted Screen Cloth per 100 ft....
$1 45@1.55
Hardware Grade, 2 to 18 mesh.....
sq. ft. 2½@3c
Hardware Grade, 20 x 20 mesh.....
sq. ft. 3@3½c
Galv Hardware Grade, 2 to 5 mesh...
sq. ft. 3¼@3¾c
Galv. Hardware Grade, 6 to 8 mesh...
sq. ft. 4@4½c

Wire Barb—See *Trade Repor*
Wire, Rop e—See *Rope, Wire.*
Wrenches—
Agricultural.....75@.....%
Baxter's S.....60&10%
Coes' Genuine.....33⅓&10&5&5&3%
Coes' "Mechanics'.33⅓&10&10&5&5&3%
Acme.....60&10%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Bull Dog, W. & B.....60&10&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70%
Solid Handles, P. S. & W.....50%
Stevenson.....60&10&10%
Stillson's.....55%

Wrought Goods—
Staples, Hooks, &c., list March 17 '98.....80c&20@85%

Yokes, Neck—
Covert Saddlery Works Trimmed.60&5.
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....lb 7¾c@8c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.
Lead, Foreign white, in Oil.... 7¾@ 9¾
Lead, American White, in Oil:
Lots of 500 ₱ or over.....@ 6¼
Lots less than 500 ₱.....@ 7
Lead, White, in oil, 25 ₱ tin pails, add to keg price.....@ ¼
Lead, White, in oil, 12½ ₱ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ₱ assorted tins, add to keg price..@ 1½
Lead White, Dry in bbls.....@ 5½
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....₱ ₱ 4¾@ 5¼
Zinc, Paris, Red Seal.....@ 8½
Zinc, Paris, Green Seal.....@ 9½
Zinc, Antwerp Red Seal.....@ 7½
Zinc, Antwerp, Green seal.....@ 8½
Zinc, V. M. in Poppy Oil, G. Seal
lots of 1 ton and over.....@11½
lots less than 1 ton.....@12½
Zinc, V.M. in PoppyOil, Red Seal,
lots of 1 ton and over.....@10¼
lots of less than 1 ton.....@11¼

DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.
Black, Carbon.....₱ ₱ 6 @20
Black, Drop, Amer.....2½@ 4
Black, Drop, Eng.....5 @10
Black, Ivory.....9 @20
Lamp, Com.....3 @ 5
Blue, Celestial.....₱ ₱ 5½@ 8
Blue, Chinese.....35 @40
Blue, Prussian.....30 @38
Blue, Ultramarine.....7 @35
Brown, Spanish.....½@ 1
Brown, Vandyke, Amer.....1½@ 2½
Brown, Vandyke, Foreign.....2½@ 3½
Carmine, No. 40.....₱ ₱ $2.15@2.75
Green, Chrome, ordinary.....5 @ 6
Green, Chrome, pure.....19 @25
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ₱ or over.....@ 6¼
Lots less than 500 ₱.....@ 7
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ₱ or over.....@ 6¼
Lots less than 500 ₱.....@ 7
Ochar, French Washed.....1¼@ 2½
Ochar, Dutch Washed.....4½@ 5
Ochar, American ...₱ ton $10.00@15.00
Orange Mineral, English..₱ ₱ 9½@13
Orange Mineral, French.....11½@11½
Orange Mineral, German.....9½@12
Orange Mineral, American ....8½@ 9½
Red, Indian, English.....4½@ 8½
Red, Indian, American .....3 @ 3½
Red, Turkey, En.li h.....5 @10
Red, Tuscan, English.....7 @10
Red, Venetian, Amer..₱ 100 ₱. 80@1.10
Red Venetian, English.₱ ₱.....1¾@ 2
Sienna, Italian, Burnt and Powdered.....₱ ₱ 3½@ 6
Sienna, Ital., Raw, Powd.....3½@ 6
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....₱ ₱ 1½@ 3
Talc, French.....₱ 100 ₱ $1.25 @1.50
Talc, American.....80 @1.10
Terra Alba, French. ₱ 100 ₱ ..80 @1.00
Terra Alba, English.....85 @1.00
Terra Alba, American No. 1....65 @70
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.₱ ₱ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @25
Vermilion, Quicksilver, bulk ...@60
Vermilion, Quicksilver, bags....@70
Vermilion, English, Import...71 @72
Vermilion Chinese.....80 @90

Colors in Oil.
Black' Lampblack.....10 @14
Blue, Chinese.....35 @40
Blue, Prussian.....32 @38
Blue, Ultramarine.....12 @16
Brown, Vandyke.....10 @13
Green, Chrome.....10 @14
Green, Paris.....@24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....10½@12
Umber, Burnt.....10½@13

Miscellaneous.
Barytes, Foreign, ₱ ton....$18.00@20.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude.....9.00@10.00
Chalk, in bulk.....₱ ton 2.15@ 2.25
Chalk, in bbls.....₱ 100 ₱ 35@
China Clay, English..₱ ton 11.00@17.00
Cobalt, Oxide.....₱ 100 ₱ 2.00@ 2.10
Whiting, Common. ₱ 100 ₱ .42@ .52
Whiting, Gilders.....54@ .64
Whiting, extra Gilders'.... .58@ .68

Putty.
In bulk.....$1.85
In bladders.....2.25
In cans, 50 ₱.....3.00
In cans, 25 ₱.....3.25
In cans, 12½ ₱.....3.50
In cans, 6 ₱.....3 50
In cans, 3 ₱.....4.00
In cans, 2 ₱.....4.50
In cans, 1 ₱.....5.00

Spirits Turpentine.
In Southern bbls.....@53
In machine bbls.....@53½

Glue.
Low Grade.....₱ ₱ 13 @15
Cabinet.....13 @16
Medium White.....14 @16
Extra White.....16 @25
French.....12 @25
Irish.....13 @15

Animal, Fish and Vegetable Oils.
Linseed, City, raw.....₱ gal. 53 @54
Linseed, City, boiled.....55 @56
Linseed, Sta e and West'n, raw 51 @53
Linseed, raw Calcutta seed.....@65
Lard, Prime.....50 @55
Lard, Extra No. 1.....43 @45
Lard, No. 1.....39 @40
Cotton-seed, Crude.....33 @34
Cotton-seed, Summer Yellow, prime.....36½@37
Cotton-seed Summer Yellow, off grades.....@..
Sperm, Crude.....@..
Sperm, Natural Spring.....@..
Sperm, Bleached Spring.....@..
Sperm, Natural Winter.....55 @58
Sperm, Bleached Winter.....60 @65
Whale, Crude.....@..
Whale, Natural Winter.....46 @47
Whale, Extra Bleached Win...50 @51
Menhaden, Crude, Sound.....@27
Menhaden, Light Strained.....30 @31
Menhaden, Bleached Winter...35 @..
Menhaden, Extra Bleached.....@37
Tallow, prime.....55 @56
Cocoanut, Ceylon.....5½@ 6
Cocoanut, Cochin.....6½@ 6¾
Cod, Domestic.....33 @35
Cod, Newfoundland.....36 @38
Red Elaine.....36 @40
Red Saponified.....₱ ₱ 5¼@ 5½
Bank.....₱ gal. ..@..
Straits.....@..
Olive, Italian, bbls.....60 @61
Neatsfoot, prime.....48 @50
Palm, prime, Lagos.....₱ ₱ 6¼@ 6½

Mineral Oils.
Black, 20 gravity, 25@30 cold test.....₱ gal. 11 @11½
Black, 29 gravity, 15 cold test. 12 @12½
Black, summer.....10½@11
Cylinder, light filtered.....15 @17½
Cylinder, dark filtered.....13 @18
Paraffine, 903-907 gravity.....14 @14½
Paraffine, 903 gravity.....13 @13½
Paraffine, 883 gravity.....11½@12
Paraffine, red, No. 1.....14 @14½
In small lots ½¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

RATES OF SUBSCRIPTION: INCLUDING POSTAGE.

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CURRENT METAL PRICES.

JANUARY 24, 1900.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round 0.6¢ ₱ lb; Square, 0.8¢ ₱ lb
1 to 1⅞ in. round and square ..... } ₱ lb 2.50@2.60¢
1¼ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1⅞ in. round and square..... } ₱ lb 2.60@2.70¢
1¼ to 4 in. x ⅜ to 1 in..... }
1⅛ to 4 in. x ¼ to 5-16..... ₱ lb 2.80@2.90¢
Rods—¾ and 11-16 round and square. ₱ lb 2.80@2.90¢
Angles: Cts ₱ lb
3 in. x ¼ in. and larger..... 3.25¢
3 to 3½ in. x 3-16 in..... 3.25¢
1¼ to 3 in. x ¼ in ..... 3.40¢
1¼ to 2¾ in. x 3-16 in and thicker..... 3.30¢
1 to 1¼ in x 3 16 in..... 3.40¢
1 to 1¼ x ⅛ in..... 3.50¢
⅞ x ⅛ in..... 3.60¢
¾ x ⅛ in..... 3.65¢
⅝ x ⅛ in..... 4.50¢
½ x 3-32 in..... 5.00¢
Tees:
1 in..... 3.70¢
1¼ to 2¾ in..... 3.60¢
3 in. and larger..... 3.40¢
Beams..... 3.50¢
Channels, 3 in. and larger..... 3.50¢
Bands—1½ to 6 x 3-16 to No. 8..... ₱ lb 3.10¢
"Burden's Best" Iron, base price..... ₱ lb 3.60¢
Purden's "H. B. & S. Iron, base price..... ₱ lb 3.40¢
"Ulster"..... ₱ lb 3.60¢
Norway Bars..... 4 @4½¢
Norway Shapes..... 4½@5 ¢

Merchant Steel from Store—

per lb
Open Hearth and Bessemer Machinery ...3.00 to 3.10¢
Toe Calk, Tire and Sleigh Shoe..... 3.75@4.00¢
Best Cast Steel, base price in small lots..... 8 ¢
Best Cast Steel Machinery, base price in small lots..... 6 ¢

Soft Steel Sheets—

¼ inch.....	3.30¢	No. 14.....	3.40¢
3-16 inch.....	3.40¢	No. 16.....	3.50¢
No. 8.....	3.30¢	No. 18.....	3.55¢
No. 10.....	3.30¢	No. 20.....	3.60¢
No. 12.....	3.35¢	No. 22.....	3.65¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16.....	₱ lb, 3.20	3.20¢
Nos. 17 to 21.....	₱ lb, 3.25	3.30¢
Nos. 22 to 24.....	₱ lb, 3.30	3.40¢
Nos. 25 and 26.....	₱ lb, 3.35	3.45¢
No. 27.....	₱ lb, 3.40	3.50¢
No. 28.....	₱ lb, 3.45	3.60¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₱ lb 10½¢
Patent Planished..... ₱ lb A, 10½¢; B, 9½¢, net.

Galvanized.

	B. B.
Nos. 10 to 16.....	₱ lb, 12¢
Nos. 17 to 21.....	₱ lb, 13¢
Nos. 22 to 24.....	₱ lb, 14¢
Nos. 25 to 26.....	₱ lb, 15¢
No. 27.....	₱ lb, 16¢
No. 28.....	₱ lb, 17¢
No. 29.....	₱ lb, 19¢
No. 30.....	₱ lb, 21¢

70 & 5 & 70 & 10 % off

86 in. 1¢ ₱ lb higher.

Foreign Steel from Store—

Best Cast..... ₱ lb 14 ¢
Extra Cast..... ₱ lb 16½ @ 17 ¢
Swaged, Cast..... ₱ lb 16 ¢
Best Double Shear..... ₱ lb 14 ¢
Blister, 1st quality..... ₱ lb 12 ¢
German Steel, Best..... ₱ lb 10 ¢
2d quality..... ₱ lb 9 ¢
3d quality..... ₱ lb 8 ¢
Sheet Cast Steel, 1st quality..... ₱ lb 14 ¢
2d quality..... ₱ lb 13 ¢
3d quality..... ₱ lb 11 ¢
R. Mushet's "Special"..... ₱ lb 46 ¢
" " " Annealed..... ₱ lb 75 ¢
" " "Titanic"..... ₱ lb 19 ¢
Hobson's Choice XX Extra Best..... ₱ lb 35 ¢
Jessop Self Hardening..... ₱ lb 40 ¢
Seamans' "Nelson" Steel..... 40 ¢
Hobson Self-Hardening..... ₱ lb 40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.

	Per lb
Banca, Pigs.....	29¢
Straits, Pigs.....	28@28½¢
Straits in Bars.....	29½¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20..... $7.50
IX, 14 x 20..... 9.00
Melyn Grade:
IC, 14 x 20..... 7.00
IX, 14 x 20..... 8.50
Allaway Grade:
IC, 14 x 20..... 6.15
IX, 14 x 20..... 7.25

American Coke Plates—Bessemer—

IC, 14 x 20 .....108 lb..... $5.30@5.40
IX, 14 x 20..... 6.25@6.30
IXX, 14 x 20..... 7.50@7.60

American Terne Plates—

IC, 20 x 28..... $10.50
IX, 20 x 28..... 12.50

Tin Boiler Plates, American—

IXX, 14 x 26.....112 sheets..... $13.00
IXX, 14 x 28.....112 sheets..... 14.00
IXX, 14 x 31.....112 sheets..... 15.50

Copper—

DUTY: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₱ lb.

Ingot—

Lake..... 17¼¢
Ansonia grade Casting..... 16½¢

Sheet and Bolt—

January 19, 1900. Prices, in cents per pound. Sheet 30 x 60. Net.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz.: 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7½ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7½ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	20½	20½	20½	20½	21½	22½	23½	26½	29½
30	96	72	20½	20½	20½	20½	21½	23½	26½	29½	
30	.....	96	20½	20½	20½	20½	22½	26½			
36	72	.....	20½	20½	20½	20½	22½	24½	27½	30½	
36	96	72	20½	20½	20½	20½	22½	26½	29½		
36	120	96	20½	20½	20½	20½	23½				
36	.....	120	20½	20½	21½	22½					
48	72	.....	20½	20½	21½	22½	24½	27½	30½		
48	96	72	20½	20½	21½	23½	25½	28½			
48	120	96	20½	20½	22½	24½	28½				
48	.....	120	20½	21½	23½	26½					
60	72	.....	20½	21½	21½	23½	26½	31½			
60	96	72	20½	20½	22½	24½	29½				
60	120	96	20½	21½	23½	26½					
60	.....	120	20½	22½	24½	28½					
72	96	.....	20½	21½	23½	28½					
72	144	96	20½	22½	25½	30½					
72	.....	144	21½	23½	28½						
108	120	.....	21½	23½	29½						
108	.....	120	23½	24½							
Wider than 108	144	.....	24½	26½							
	.....	144	25½	28½							

Bolt Copper, ½ inch diameter and over, ₱ lb 20½¢
Circles, Segments and Pattern Sheets, 3¢ ₱ lb advance over price of sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₱ square foot and heavier, 1¢ ₱ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₱ square foot, 2¢ ₱ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₱ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₱ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₱ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₱ lb ..... 24½¢
12 oz. and up to 14 oz. to square foot, ₱ lb ..... 25½¢
10 oz. and up to 12 oz., ₱ lb ..... 27½¢
Lighter than 10 oz. ₱ lb ..... 30½¢
Circles less than 8 in. diameter, 2¢ ₱ lb additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8 Base	9 and 10		11 and 12
	⅛¢			¼¢ ₱ lb adv.
Nos.	13	14	15	16
	⅛¢	¼¢	1¢	1¼¢ ₱ lb adv.
Nos.	17	18	19	20
	1¾¢	2¢	2½¢	2¾¢ ₱ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	39	37	36	35	34
22	21	70	58	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₱ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	24	25	27	28 ₱ lb

Copper, Bronze or Gilding Tubes, 3¢ ₱ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896
Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¼ in. up to 2 in.....	$0.35
" " ⅛ " ¼ "	.36
" " ⅛ " ⅛ "	.38
" " ⅛ " ⅛ "	.41
" " 5-16 " ⅛ "	.48
" " ¼ " 5-16 "	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16 "	1.50
Smaller than ¼ inch.....	Special
3 inch and larger.....	.40
Over 3 inch to 3½ inch, inclusive.....	.45
Over 3½ inch	.50
Bronze and Copper, advance on Brass List, 3 cents.	
Discount from list 2.....	25@30%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	2 12	12 14	14 16	16 18	18 20	20 22	22 24	24 26
	in.	in.	in.	in.	in.	in.	in.	in.
To No. 20, inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24.	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39

Common High Brass. Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive ..	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24.	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add 1¢ ₱ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 15%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive....	$0.23	$0.27	$0.28
Above No. 10 to No. 16.....	.23½	.27½	.28½
No. 17 and No. 18.....	.24	.28	.32
No. 19 and No. 20.....	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 15%; Copper Wire, NET. List November 16, 96.
Spring Wire, 2¢ ₱ lb advance.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₱ lb
Western Spelter..... 5¼@5¼¢

Zinc.

Duty: Sheet, 2¢ ₱ lb.
600 lb casks..... 7¾¢ | Per lb ..... 8@8¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₱ lb. Pipe and Sheets, 2½¢ ₱ lb.
American Pig..... 5½@5¾¢
Bar..... 5¾¢
Pipe (full lengths), subject to discount 20%..... 7¢
Pipe cut lengths), subject to discount 20%..... 7½¢
Tin Lined Pipe, subject to discount 20%..... 12½¢
Block Tin Pipe, subject to discount 20%..... 40¢
Sheet (full rolls) subject to discount 20%..... 8¢
Sheet (cut rolls (subject to discount 20%..... 9¢
Old Lead in exchange, 4½¢ ₱ lb.

Solder.

½ & ½, guaranteed..... 19@20¢
No. 1..... 16@17¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₱ lb.

Cookson.....	₱ lb 11¼
Hallett's.....	₱ lb 10¼
U. S.....	₱ lb 10@10½¢

Aluminum—

Duty: Crude, 8¢ ₱ lb. Plates, Sheets, Bars and Rods, 13¢ ₱ lb.
No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:
Small lots..... ₱ lb 37¢
100-lb lots..... ₱ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₱ lb 34¢
100-lb lots..... ₱ lb 33¢
Aluminum Sheet, B. & S. gauge. 50 lb or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₱ lb.	₱ lb.	₱ lb
Nos. 13 to 19.....	$0.42	$0.44	$0.47
No. 20.....	.44	.46	.49
Nos. 21 to 23.....	.46	.48	.51
No. 24.....	.46	.50	.53
No. 25.....	.47	.51	.54
No. 26.....	.47	.54	.59
No. 27.....	.48	.57	.62
No. 28.....	.48	.57	.64
No. 29.....	.49	.60	.69
No. 30.....	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₱ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9 ₱ lb 40¢	No. 15..... ₱ lb 43¢
No. 9 to No. 10.. ₱ lb 40½¢	No. 17..... ₱ lb 50¢
No. 11..... ₱ lb 41 ¢	No. 18..... ₱ lb 55¢
No 12..... ₱ lb 41½¢	No. 19..... ₱ lb 60¢
No. 13..... ₱ lb 42 ¢	No. 20..... ₱ lb 65¢
No 14 ..... ₱ lb 42½¢	No. 21..... ₱ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper.....	₱ lb 14½¢
Light and Tinned Copper	₱ lb 13½¢
Heavy Brass	₱ lb 10½¢
Light Brass.....	₱ lb 8½¢
Lead.....	₱ lb 4½¢
Tea Lead.....	₱ lb 4¢
Zinc.....	₱ lb 3½¢
No. 1 Pewter.....	₱ lb 17 ¢
No. 2 Pewter.....	₱ lb 9 ¢
Tin Plate Scrap.....	₱ ton $6.00
Wrought Scrap Iron.....	₱ gross ton $12.75
Heavy Cast Scrap.....	₱ gross ton $11.25
Stove Plate Scrap.....	₱ gross ton $7.50
Burnt Iron.....	₱ gross ton $5.50

MADE IN VARIOUS SIZES

See Our Advertisement, Issue January 4.

CARY MFG CO., 19 & 21 Roosevelt St., NEW YORK.

WHY ARE WE LEADERS?

BECAUSE the largest consumers acknowledge the Superior quality of our

Scrap Copper, Scrap Brass, Scrap Lead, Scrap Zinc,

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98, 100, 102 TERRACE, BUFFALO, N. Y.

All Metals Carefully GRADED and Made FREE of Iron.

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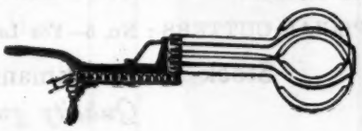

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BY VARIOUS ARCHITECTS.

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A series of twenty-five designs of cottages, most of which have already been erected, ranging in cost from $600 to $1,500, together with constructive details of interior and exterior finish, all drawn to convenient scale and accompanied by brief specifications.

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The practical value of the designs is further enhanced by the addition of brief ***specifications.***

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TWO SIZES { Small size Bores from ⅛ in. to 1½ in.
Large " " " ⅞ in. " 3 in.

SPECIAL CUTTERS: No. 5—For Large Bit, Bores from 3 in. to 4 in. No. 6—For Large Bit, Bores from 4 in. to 5 in.

Stock and workmanship superior to all others. Every part interchangeable.
Quality guaranteed. For sale by all Hardware Dealers.

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We make only the best.

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67 BEEKMAN STREET, NEW YORK.
143 MILK STREET, BOSTON.
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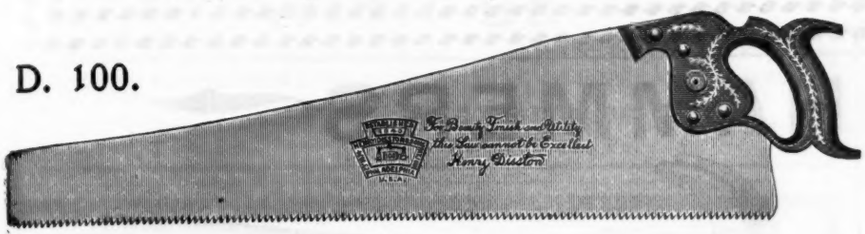

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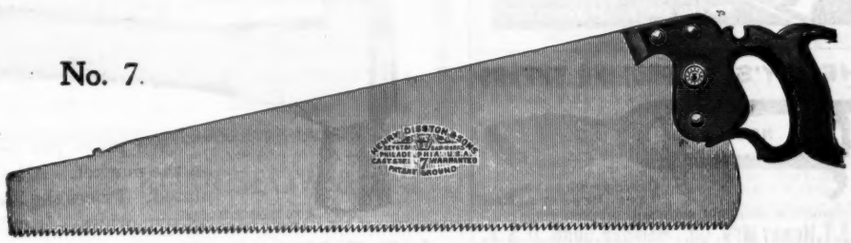

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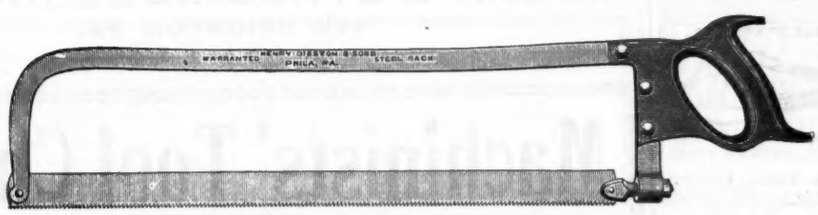

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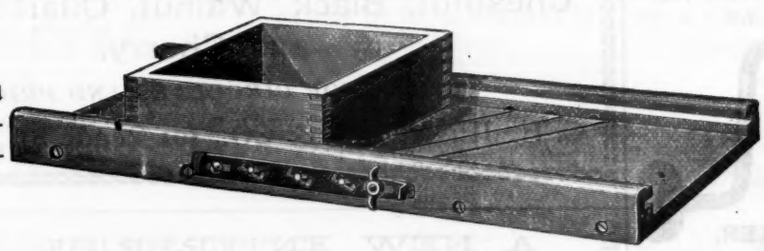

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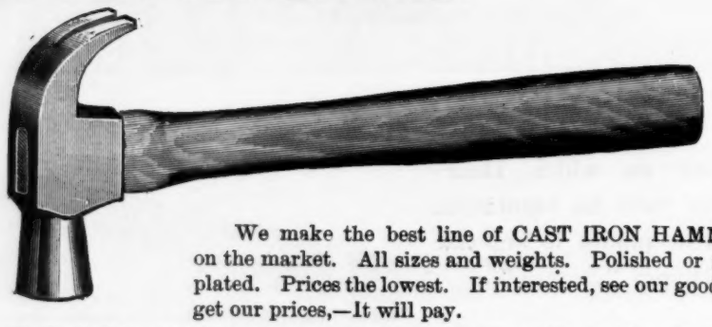

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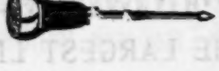

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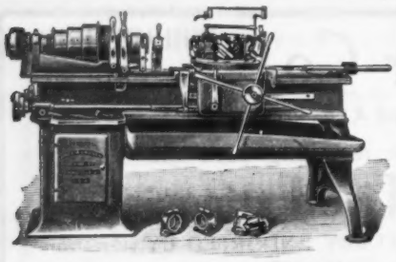

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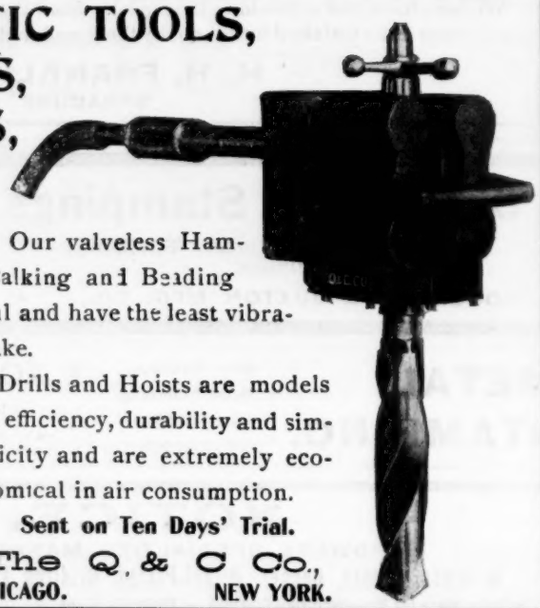

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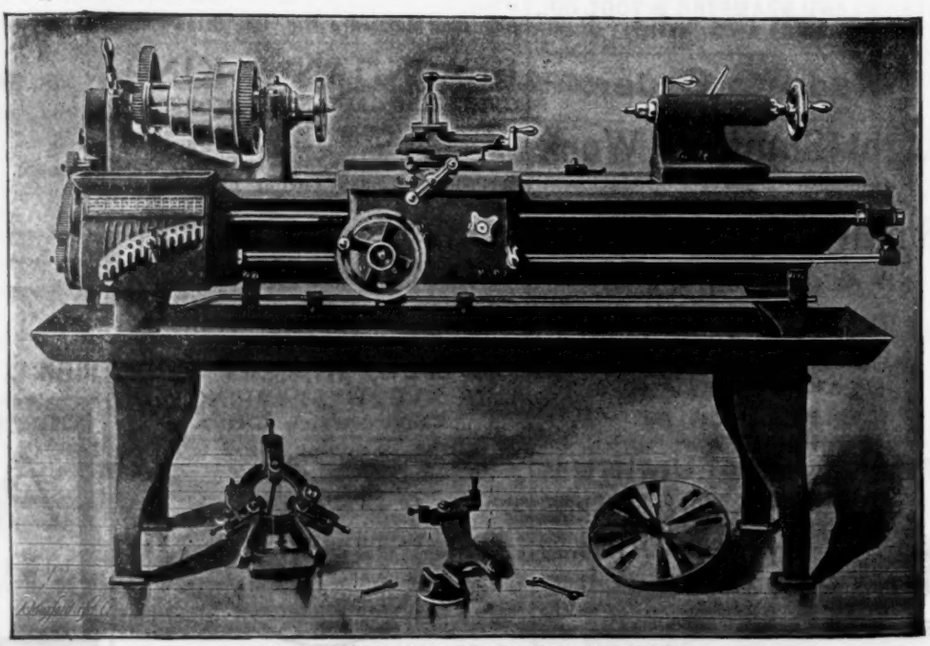

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